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THE
NEW ENGLAND JOURNAL
OF
MEDICINE AND SURGERY,
AND
THE COLLATERAL BRANCHES OF SCIENCE.

.....
CONDUCTED BY A NUMBER OF PHYSICIANS.
.....

Homo naturæ minister et interpres tantum facit et intelligit, quantum
de naturæ ordine, re vel mente, observaverit; nec amplius scit aut
potest.

Francis Bacon.

VOLUME III.

BOSTON:

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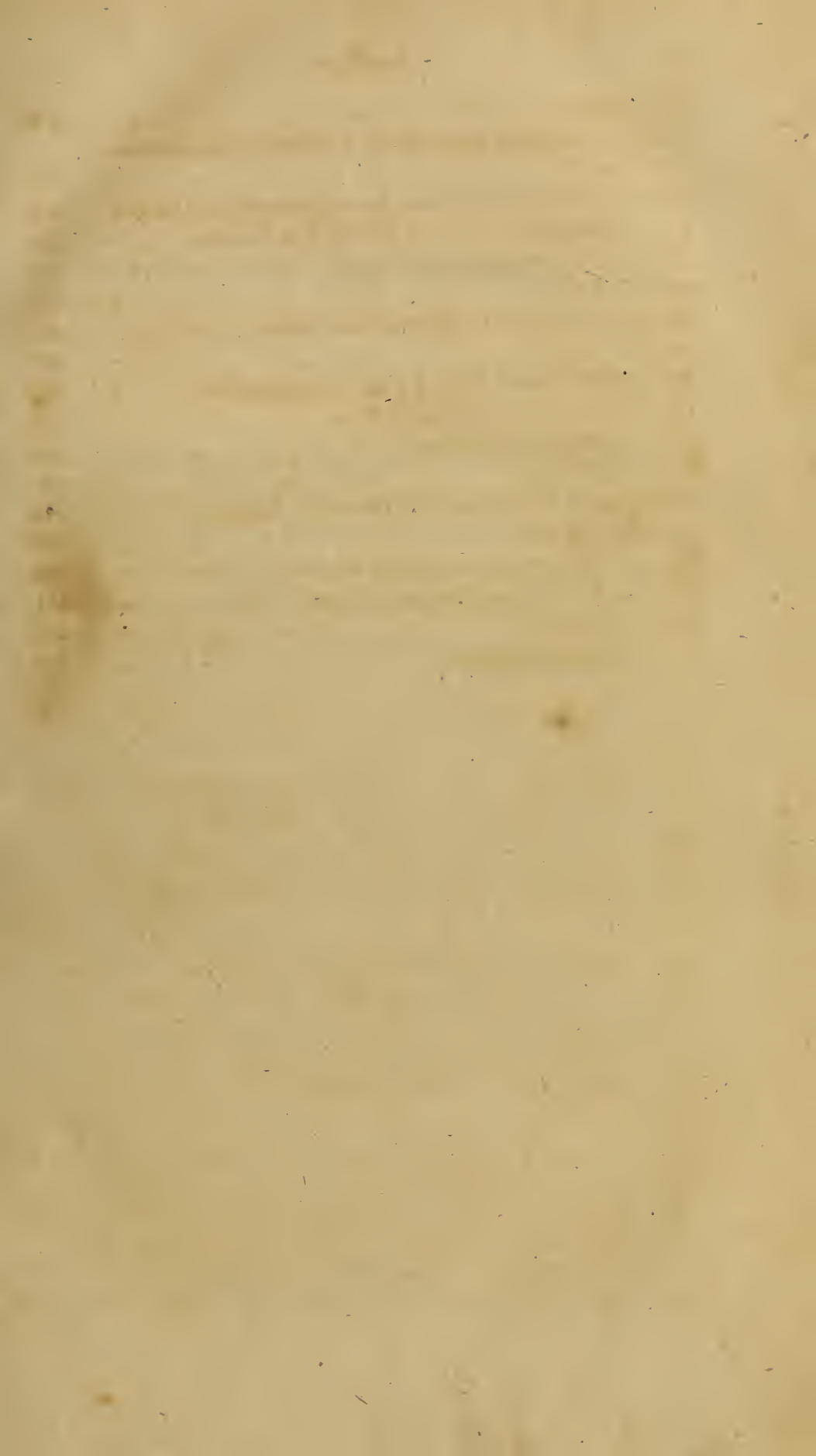
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NOTICE OF THE EDITORS.

AT the time of commencing the New-England Medical Journal, the Editors felt an assurance that a work of the kind must involve objects of sufficient interest and importance, to ensure its support from the public, when its character and views should become sufficiently known. Under this conviction they have devoted the labour of two years, and incurred a very considerable degree of trouble and expense; with the hope of rendering it a *permanently useful work*. They have now the satisfaction to believe that the circulation of their Journal has become extensive when compared with other works of the kind. The subscription has not hitherto been great, but it has been constantly increasing, and has at length enabled them to disconnect themselves with the pecuniary care of the work, and to place it on a permanent footing for publication.

Many of the causes which at first rendered desirable a Journal of Medicine and Philosophy in this part of the country, are now operating with increased effect. The receipt of European publications has become uncertain and difficult in the extreme. Of course the few which do arrive acquire additional interest and consequence. It is presumed that no place is at present more frequently furnished with foreign scientific intelligence, than this metropolis. While the present state of affairs shall continue, the Editors will make it a primary object to present to their readers the latest scientific news from abroad, with as much

regularity as possible. Important facts or discoveries relative to chemistry, agriculture, and natural history, will always receive attention and early insertion.

The Journal will continue to be a vehicle of original communications, and of the correspondence of such practitioners and experimental observers, as may favour the conductors of the work with interesting facts, inferences and improvements, relative to medicine and to general science.

It is the wish of the Editors and Publishers to give one or more plates to each volume of the Journal. This design they will carry into effect so far as the state of the subscription will justify the expense.

THE PUBLISHERS OF THE MEDICAL JOURNAL,

In addition to the preceding statement of the Editors, have only to observe, that every attention on their part will be given to have the work well executed and promptly delivered to subscribers. They feel confident that a publication of this kind, conducted by gentlemen of the first professional eminence in the metropolis, and which has been honorably noticed by the Medical reviewers in London, will receive extensive patronage; especially as Medical Institutions have of late been, and still continue multiplying in our country, and those who wish to be considered respectable and useful practitioners have become ambitious of acquiring a knowledge of the improvements and discoveries constantly making in the science of Medicine and Surgery.

It will be observed, that the Editors propose introducing into the future Numbers of the Journal, facts and essays relative to Agriculture, Chemistry and Natural History, which cannot fail to render the work more *generally useful*, and highly interesting to literary and scientific men of all professions.

It is confidently expected, that the Journal will be more and more worthy of public attention and patronage ; and it is also proper to remark, that there is no periodical publication of this character in the United States, the price of which is so moderate.

At a future period, the Publishers have it in contemplation, as suggested in the address of the Editors, to give an additional quantity of pages to each Number, and embellish the work with an engraving each quarter. This will consequently enhance the price of subscription, and will only be done with the approbation of their patrons.

CONDITIONS.

1. The New-England Journal will be published on the first of January, April, July and October.

2. It will be handsomely printed, and contain about one hundred pages each Number, embellished with one or more engravings.

3. The price is two dollars a year, payable on *the delivery of the first Number*.

4. Whoever will comply with the conditions for ten subscribers, shall have an additional copy gratis.

5. It is requested that those subscribers who live at a distance will transmit the payment therefor, *free of expense to the Publishers*, at an early opportunity.

6. Any gentleman, not previously a subscriber, receiving a copy of the first Number for the ensuing year, may have the future Numbers continued to him, by signifying the same, with the mode of conveyance, to the publishers.

* * This work can be transmitted by mail to any part of the United States, at an expense not exceeding *ten cents* a number, for the greatest distance. Previous Numbers of this work can be furnished from the beginning.

BRADFORD AND READ.

BOSTON, 58 Cornhill.....20th December, 1813.



THE
NEW ENGLAND JOURNAL
OF
MEDICINE AND SURGERY.

VOL. III]

JANUARY, 1814.

[No. I.

SOME HISTORICAL ACCOUNT OF
THE PROGRESS OF MEDICAL SCIENCE
DURING THE LAST YEAR.

IN the beginning of our last volume, we commenced an historical outline of the progress of Medicine during the three preceding years. This undertaking was attended with serious difficulties, on account of the interrupted intercourse between this country and Europe, an evil which is very far from being diminished at the present moment. During the last year a few works of some importance have reached us from England and France, and an imperfect series of the various Journals as far down as August. Desirous of remedying, in some degree, the dearth of scientific intelligence, which we believe our readers participate with no less inconvenience than ourselves ; we present a partial sketch of the last year's Medical history, collected from such books as we have been able to obtain, and from Mr. Royston's half yearly Report in July.

During the first part of the year 1813, anatomy and physiology received several additions. These are a work from Dr. Monroe ;

an essay on the absorbents, by Mr. Pring; the annual oration at the Medical Society of London, on the principles of Physiological and Physical science, and the first fasciculus of a work of considerable excellence on the morbid anatomy of the liver, by Dr. Farre. The work of Dr. Monroe in three octavo volumes, and a volume of plates is an abstract of the course of lectures on Anatomy and Physiology, long delivered at the university of Edinburg, by the celebrated individuals of that family. It embraces a very extended view of that subject, both as regards the natural state and healthy functions of the animal frame, and its diseased alterations and morbid actions. The little volume of Mr. Pring professes to comprise a history of the discovery of the absorbent system; a cursory view of the anatomy and physiology of that system of vessels and glands, an account of its morbid condition, and some inquiry into the relation that exists between the absorbing and secreting systems. The essay of Mr. Saumarez defines man to be "a rational soul in an animated body, which it employs as its instrument;" and this gives the occasion for exercising a castigation upon M. Richerand, who, in his Elements of Phisiology, twice translated into English, asserts, "That our physical, holds our moral nature under a strict and necessary dependance; that our vices and our virtues, sometimes produced and often modified by education, are frequently too the result of organization." This assertion, which strikes at the root of all moral restraint and the assumed data on which it is founded, Mr. Saumarez attacks with the feeling and ardent eloquence of a man, who is himself convinced of the existence of moral good and moral evil; and with the knowledge of an unprejudiced naturalist, who views a series of facts without being bound down by the confusion and bias of hypothesis. A principal dogma in the theory of Richerand is, "That the measure of the understanding is according to the number and perfection of the organs of sense." The French physiologist having thus far committed himself, it seemed not very difficult to refute his hypothesis, by the simple fact as it really stands in nature. So far from Richerand's assumption being true, it is demonstrable, that the organs of sense are far more perfect in those animals that have the smallest, than in those that have the greatest portion of understanding. Mr. Saumarez produces a number of

instances to prove this fact, and there is no doubt he is supported by general observation.

The first fasciculus of Dr. Farre's work on morbid alterations of structure in the liver, has considerably enriched this branch of the art, without, however, bringing with it the satisfaction of having suggested any remedial process. On the contrary, it tends to shew, that the two forms or species of disease of the liver, which this fasciculus describes under the terms *Tubera circumscripta*, and *Tubera diffusa*; are incurable.

The term *tubera* is used by Dr. Farre to denote tumours of a cellular structure and fungous nature, producing, in general, remarkable elevations on the surfaces of the affected parts. The *tubera circumscripta* are chiefly confined to the liver itself; their colour inclines to a yellowish white; they elevate the peritoneal tunic of the liver, and their projecting surfaces are marked with a white indentation near their centres. At commencement they are minute, but eventually each tuber acquires a diameter of more than an inch. They adhere to the liver closely, and their figure is well defined. The different *tubera* ultimately coalesce so as to form immense morbid masses, occupying nearly the whole substance of the liver, and filling a great part of the abdomen. The symptoms, according to Dr. Farre, are pain in the region of the liver, languor, loss of appetite, and cough; but a clear diagnosis cannot be formed until the liver, by the growth of the *tubera*, descends below the hypochondrium; then the functions of the alimentary canal are more impaired; the body wastes, and the hardness and irregularity of the liver may be distinguished from without. In the advanced stage, respiration is impeded by its enormous bulk, and the bowels are prone to diarrhea.

The second species, *tubera diffusa*, may affect other textures of the body as well as the liver. They may appear in a distinct or confluent form; and upon the surface of the liver, they produce a more gradual and uniform swell, than the former species. The symptoms are not unlike those of *tubera circumscripta*, except when other textures of the body are affected.

The work of Dr. Farre is accompanied with rich coloured engravings, and when complete will constitute a splendid and important acquisition to the science of morbid anatomy.

Animal Chemistry, a subject connected with physiology and medicine, has been much illustrated by Dr. Berzelius, professor of chemistry in the college of medicine at Stockholm; and his labours have been rendered accessible to the English reader, by a translation of his progress and present state of this art, by Dr. Brunnmark. The celebrated French chemist Vauquelin, has lately finished a minute and elaborate analysis of the cerebral matter of man and other animals.

In the report of the National Vaccine Establishment of Great-Britain, it appears that the prejudices against vaccination have greatly declined, and that in the city of London three fourths of the children born are submitted to that salutary operation. Nevertheless a great number of deaths from small pox have happened, owing to the rash and inconsiderate manner in which the inoculation for that disease is still kept up, and the intercourse of infected individuals with society. In India the vaccine disease has been received with joy and practised in an extensive manner. In the island of Ceylon more than 200,000 persons have been vaccinated since its first introduction. At the Cape of Good Hope where the small pox has been dreaded not less than the plague, an active and successful Vaccine Institution has been established. At the Havanna 13,447 persons were vaccinated in 1810, and for two years no burial from the small pox had occurred in the public burying ground. At Caraccas the small pox is said to have been extinguished by vaccination. In the Russian empire where vaccination was introduced in 1804, more than one million, two hundred thousand persons have received it. It was formerly calculated that one child in seven died annually of the small pox, on which calculation it appears that 176,519 lives have been saved by vaccination in the Russian empire alone. In France, from a report submitted to the class of physical sciences of the Imperial Institute, it appears that out of 2,671,662 subjects properly vaccinated, only seven cases appear of patients having afterwards taken the small pox, which is one to 381,666.

Some prospect of a cure for the deplorable disease *hydrophobia* has lately come into notice from the remote continent of India. A case by Mr. Tymon in which the disease was successfully treated by *bleeding* has been already presented to our

readers. Since that time another case in the same country has been related by Dr. Shoolbred, in which a patient labouring under the worst symptoms of canine madness was cured by copious bloodletting. During the first venesection in which two pints of blood were taken, the distress so far subsided that the patient drank with great satisfaction a quantity of water, the sight of which a few minutes before had thrown him into the greatest agony.

A French work, *Memoires de Chirurgie Militaire*, by M. Larrey, being the result of observations made by the author during the various campaigns of the French army, forms a valuable addition to the surgical literature of this period. Almost every variety of disease and accident occurring to the soldier on actual service has received illustration from the collections of this accomplished surgeon. The typhus of camps and hospitals, the effects of fatigue and privation, the consequences of exposure to great changes of temperature, are explained in this work, with minuteness and precision. The losses sustained in the French armies by the coldness of the Russian climate in the latter part of 1812, though upon a scale to excite interest and curiosity; had been felt before in the campaign in Poland. Few soldiers of the advanced guard after the battle of Eylau escaped the effect of severe cold upon their toes, feet, nose or eyes. There is a remarkable fact connected with this, illustrating the effect produced by heat after cold. Not a single man suffered from the frost during the time the mercury was at 20° and downwards to 0° Fahrenheit; but as soon as the mercury rose above 32° and a thaw began, many of the soldiers began to complain of violent pain and numbness in their extremities, and the parts assumed a deep red colour. Those who exposed themselves to the fire fared the worst, while those who rubbed the frost-bitten parts with snow and brandy and water escaped mortification. The opinion of M. Larrey is that cold was only the predisposing cause of mortification, and that the sudden application of a high temperature to the torpid parts is essential to the production of inflammation and gangrene. An American translation of this work is announced as shortly to appear.

On the subject of medical science generally, a valuable volume by Dr. Thomas Young, under the title of "An Introduc-

tion to Medical Literature," has appeared this year. This assumes in a degree the form of a Bibliotheca, it contains numerous references to authors under particular classes; but is principally occupied in supplying a more correct nosology, founded upon the principles of the *Philosophia Botanica* of Linnæus. Dr. Young has succeeded in bringing together an highly useful body of reference and has enriched his work with a number of ingenious disquisitions.

A purulent inflammation of the tunica conjunctiva known in Great-Britain by the name of *Egyptian ophthalmia* has been attended with very destructive effects. Bleeding in this complaint had been employed with considerable, but not with perfect success. A new mode of treating the disease suggested by Mr. William Adams, surgeon and oculist; seems to have been efficacious in arresting the evil in its onset. The process at first pursued by him consisted in giving such a quantity of emetic tartar as would keep up sickness and vomiting constantly for eight or ten hours, at the same time applying within the eyelids some of the ung. hydrarg. nitr. oxyd. This succeeded perfectly. The vomiting was afterwards tried without the ointment and was equally successful. It generally removed the distressing symptoms in a few hours after its application. The only direction which Mr. Adams considers necessary in exhibiting the antimony, is to give it in doses adapted to the age and constitution of the patient, *as soon after the commencement of the disease as possible*. The favourable influence of antimony has been confirmed by Mr. George Fielding of Hull, who found it efficacious not only in ophthalmia, but likewise in opacity of the cornea and in the cases of inflammation which sometimes succeeded to couching and other operations on the eyes.

A new mode of treating insane persons practised in London by Messrs. Tardy and Lucett, appears to have attracted notice during the two last years. Some account of it is published in the Medical and Physical Journal for August, accompanied with the case of Mr. Morgan, Editor of the Dublin Correspondent. This patient is stated to have laboured under a state of mind approaching to idiotism, blended with melancholy; but without any symptoms of mania ferox. He had been insane about 18 months. The method which succeeded in relieving him con-

sisted in "warm immersions and warm effusions on the head, conducted in such a manner by a considerable column of water as to produce a slight concussion upon the shaven vertex. The bath was at first 93°, and subsequently increased to 107-8°. He was kept in the bath about four minutes in the first trial, and afterwards from thirty to forty minutes." The process and its inferences are modestly stated and announced as subjects of future inquiry.

Some other articles relative to medicine and its collateral branches which have reached us from England and France appeared of sufficient importance to merit insertion or separate notice, and will be found in other parts of the present number.

EXPERIMENTS ON THE PRINCIPLE OF LIFE,

ESPECIALLY ON THAT OF THE MOTIONS OF THE HEART, AND ON
THE SEAT OF THIS PRINCIPLE.

BY M. LE GALLOIS.

[Translated for the New-England Journal of Medicine, &c.]

In the first volume of this Journal we introduced a brief notice of the experiments of M. Le Gallois. We can now present the Author's first memoir, except some of its least important parts, which, for brevity's sake, have been omitted. In a future number we shall notice the prosecution of his experiments and their interesting results. A better idea of their importance cannot be obtained than from the following extract from a report to the National Institute of France. "Your committee are of opinion, that the labours of M. Le Gallois are among the most brilliant, and certainly the most important, since the experiments of the learned Haller. They believe that this work will form an epoch in the science of physiology, and diffuse through it a light, which must be wholly new, &c.

"Signed by HUMBOLDT, HALLE, PERCY."

THE faculty of *feeling* and that of *moving* are among the most distinguishing characters of animals. It may be said even, that the principal end of the organization of an animal is to produce and maintain these two faculties. Whatever may be the secret springs, which nature employs for the purpose, as soon as a

being feels and moves, it is an animal, which lives and possesses the sensation of its existence. To know in what consists the essence of life, it is therefore necessary to be able to distinguish, on what state or condition of the organization of an animal depend *sensation and motion*. Now there are two things to be settled in this research, one is the *nature* of this state or condition; the other is to determine the parts, in which it resides, that is to say, its *situation*. If, for example, we suppose that sensation and motion depend on a particular principle produced by organization, we must inquire what is the nature and what the seat of this principle. These questions have given rise to numerous opinions; and to speak of the last only, in this place, we may say that although it appears susceptible of a more easy solution than the other, yet nobody has hitherto been able to find one, which is satisfactory and accordant with the known facts.

It might be supposed that the principle of sensation and motion had its seat in every part of the feeling and moving body. But observation having taught that, if a nerve be divided in any part of its course, all those parts to which it is distributed are instantly deprived of sensation and motion, it was necessary to admit that the principle which feels is not in the part which receives the impression, nor that which determines motion in the part that moves; and that to discover the seat of them, it is necessary to ascend to the origin of the nerves. Now as all the nerves arise from the brain and spinal marrow, these parts were fixed on, as the fountains of life. But a crowd of facts proved, on the one side, that the destruction or even partial lesion of the brain suddenly produced death, on the other, that the transverse section of the spinal marrow in any part of its length palsied all the parts below the section, while the parts above, continuing to communicate with the brain, preserved their sensation and motion. Moreover, anatomy had considered the spinal marrow merely as a great nerve, arising from the brain, in the same way as all those, which issue by different passages from the skull, and which, like them, divides from space to space, in order to furnish the intervertebral nerves. In a word, this spinal marrow was nothing more than the bundle of nerves of the trunk. The *brain* therefore was regarded as the primary fountain of the

nervous power, and of course as the sole repository of the principle of life.

This opinion was carried still farther. The unity of being, the metaphysical ideas connected with it, and the consideration that certain parts of the brain could be injured and even destroyed, consistently with life, lead to the belief that this organ, taken as a *whole*, was not the seat of this principle; but that it resided in a circumscribed part, where all the sensations terminated and all the motions originated; and this place, which was designated by the name of *sensorium commune*, or seat of the soul, has been long the object of the researches of physiologists.

Not only was the object of these researches never attained, but in proportion as the known facts were considered and new ones observed, it was perceived to become more and more difficult to reconcile all these facts with the opinion, which places the principle of sensation and of all the animal motions in the brain. In reality, it was impossible, consistently with this opinion, to explain why reptiles, such as turtles, lizards, &c. continue to live for months, after being decapitated, nor why animals of the inferior classes present phenomena, which are similar or even more extraordinary. The only method of surmounting these difficulties was, by saying that in the cold blooded animals referred to, the nervous influence was subject to different laws from those, which govern it in warm blooded animals.

A sufficient number of facts, observed in warm blooded animals, are however opposed to this explanation. It is a very certain fact that birds continue to walk and even run, after their heads are cut off. The exploit of the Emperor Commodus is well known. He amused himself with shooting arrows of a crescent form at ostriches running in the circus; these animals did not suspend their career, but continued to run to the end of the course. Many physiologists have obtained similar results by decapitating turkeys, cocks, ducks, pigeons, &c. It was necessary therefore to admit for these animals another exception to the laws of the nervous influence, and to confine the received theory to man and other mammalia.

The observations of late physiologists show that even with this limitation, the theory that places the principle of sensation and motion in the brain is not well founded. Many years ago, the

physiologist Fontana discovered that after decapitating rabbits and guinea-pigs, and preventing hemorrhage by the ligature of the vessels of the neck ; he could keep them alive, for sometime, by blowing air into the lungs. This experiment, which has been repeated a great number of times, dearly proves that in adult mammalia, as in reptiles, the life of the trunk does not depend on the brain. After this, there was but one step to take ; this was to inquire where is the true source of this life, and to seek the answer to this question in a great number of experiments. This Fontana did not do ; and although his experiment has been repeated, no great light has been thrown on this subject since.

An accidental occurrence led Mr. Le Gallois to consider the cause of death in foetus', which perish during delivery by the feet, and he found by analysis that this question was reduced to the consideration, how the cessation of the *influence of the brain* produces death in the trunk of the body ?

I began my experiments, says he, on rabbits for the purpose of ascertaining how long the foetus, separated from its mother, can live without breathing. On these same animals I continued my researches, on the phenomena of decapitation.

I remarked first, that, after the decapitation of a rabbit, life continues in the trunk and that sensation and voluntary motion subsist for a time, which is evidently the same, as when a rabbit of the same age is asphyxied. This time varies according to the age. By asphyxying rabbits of different ages, every five days, from the moment of birth to the age of a month, we constantly observe that the duration of sensation and voluntary motion, in a word, of the signs of life, continually decreases in proportion as these animals advance in age. Thus, in a new born rabbit, sensation and voluntary motion are extinguished at the end of fifteen minutes, while in a rabbit thirty days old, they disappear in less than two minutes. Now, by decapitating rabbits every five days, in the same manner, I observed that the duration of these phenomena decreased from age to age, agreeably to the same law as in asphyxia. But there was this essential difference between the animal asphyxied and that decapitated ; that the former made efforts to breathe ; each of these efforts being characterised by a contraction of the dia-

phragm and an elevation of the ribs, and accompanied with a gaping. These gapings and motions of the thorax, which are the last observable signs of life, become weaker and weaker, but continue always after the cessation of sensibility and voluntary motion. In the decapitated animal, on the contrary, all the inspiratory motions of the thorax cease, at the very instant of decapitation; the head alone continues its gapings, which are perfectly similar to those in asphyxia. If instead of decapitating the animal we merely cut the spinal marrow, between the head and first vertebra, the phenomena are the same as after decapitation; that is, the motions of the thorax cease immediately and the head preserves the gapings of asphyxia—In a word, whether after decapitation, or after division of the spinal marrow, near the head, the gapings are the only remains of the inspiratory motions. They are indices of vain efforts, which the head makes to inspire. This is a remarkable phenomenon, and one of which I shall make great use hereafter, by constantly considering the gapings, as the representative signs of the inspiratory motions.

I conclude from the comparison of these facts, that a decapitated animal is asphyxied; and that he is so, because he cannot execute the motions necessary to cause air to enter the lungs. In order to ascertain the justness of this conclusion, a very simple method presented itself; which was, to supply the want of natural respiration by inflation of the lungs. I made the experiment, and its success was complete. In order to succeed, it is not even necessary to have recourse to the pulmonary inflation, immediately after decapitation. If we wait till sensation and voluntary motion cease, we soon see them revive and appear in a remarkable degree; and if we then interrupt the inflation, they immediately grow weak, disappear wholly, and the animal seems dead; but they reappear anew, and with the same degree of energy, on recommencing the inflation. I have repeated this experiment with the same success on dogs, cats, and guinea-pigs. Thus we may keep a decapitated animal perfectly alive, and that during a time which varies according to the species and age; and which, in very young rabbits, is at least a number of hours.

It evidently resulted from these facts, that the principle of sensation and voluntary motion does not reside in the brain as

the most common opinion supposes ; or, at least, not exclusively in that organ. But where then is the seat of this principle ? Has it a particular and circumscribed situation, or is it diffused through the whole body ?

The following experiments soon convinced me, that it resides in the *spinal marrow alone*. If in a decapitated rabbit, which is kept perfectly alive by pulmonary inflation, we destroy the spinal marrow by pushing a probe of iron through the whole length of the vertebral canal, all the phenomena of life disappear at the very instant, even without it being possible to recal them by any method. The irritability alone remains, which, as is well known, exists sometime after death. If we take another rabbit, and instead of decapitating him, simply make an opening in the spinal canal, near the head, and with an iron rod, introduced into this opening, destroy the spinal marrow ; although in this case the head remains uninjured as well as its nervous connections with the trunk, yet the life of the trunk does not the less disappear immediately and without return. It continues in the head alone, as the gapings indicate. Lastly, If we divide another rabbit transversely into two halves, each of the two halves continues living, that is, capable of feeling and moving, during a certain number of minutes, varying according to the age of the animal, as I shall particularly show. If immediately after the division we destroy the spinal marrow in one of the halves, life ceases at the instant, while it continues in the other : and if in the latter we destroy only a part of the spinal marrow, all the parts of the body which receive their nerves from this portion, are immediately struck with death, while the rest of this same half continues alive.

These experiments prove not only that the life of the trunk depends on the spinal marrow, but that the life of each part of it depends on that portion of the spinal marrow, from which it receives nerves. Moreover, it is easy to demonstrate that this prerogative of the spinal marrow, of being the source of sensation and of all the voluntary motions of the trunk, belongs to it exclusively of every other organ, and that none of the viscera of the thorax or abdomen has any immediate share in it. For, if we open the chest and the abdomen of a rabbit, and remove the heart, lungs, diaphragm, intestines, in a word, all the viscera

of these two cavities, he still remains alive after this cruel operation; and if moreover we cut off the head, although thus reduced to his skeleton, to the spinal marrow and muscles, he still continues alive; but if we destroy the spinal marrow, in part or in whole, he is immediately struck with partial or general death.

It is therefore certain that the life of the trunk has its immediate principle neither in the brain, nor in any of the viscera of the thorax or abdomen; but it is not less true that all these viscera are indispensable to maintain it. Now in considering in what way they are thus indispensable, the facts stated above evidently prove that, as to the brain, the mechanical phenomena of respiration, that is to say, the motions by which the animal causes air to enter its lungs, depend immediately upon this organ. Thus it is principally *inasmuch as the support of life depends on respiration that it depends on the brain*. This gives rise to a great difficulty. The phrenic nerves and all the other nerves of muscles that perform the mechanical phenomena of respiration take their origin in the spinal marrow, in the same manner as the nerves of the other muscles of the trunk. How does it happen then, that after decapitation, the inspiratory motions alone are annihilated, while the others continue? This is in my opinion one of the great mysteries of the nervous power; a mystery which will sooner or later be unveiled, and where discovery will throw a brilliant light on the mechanism of the functions of this wonderful power.

But whatever may be the organic arrangement, by virtue of which the mechanical phenomena of respiration depend on the brain, this dependance is certain; and it is equally certain that it is exerted through the spinal marrow; for as I have already said, if we simply cut this marrow near the head, the animal is found to be evidently in the same state, as if his head were cut off.

Respiration does not however depend on the whole brain, but on a circumscribed part of the medulla oblongata, which is situated at a small distance from the nerves of the eighth pair, or pneumo-gastric. For if we open the head of a young rabbit and extract the brain by successive portions, from before backwards, cutting it by slices, we may, in this manner, remove the whole of the brain properly so called, and afterward the whole of the cerebellum and a part of the medulla oblongata, without stopping

the respiration. But it suddenly ceases, as soon as we come to comprehend in the section, the origin of the nerves of the eighth pair.

We may therefore decapitate an animal in such manner that he may continue to live by his own powers and without the aid of pulmonary inflation. But it is evident that the place, where the prime mover of respiration resides, can maintain that function no longer than while it continues to enjoy the plenitude of its functions; which supposes that all the parts remain nearly in a sound state. But in warm blooded animals the size and number of the blood vessels, opened in this operation, occasion a bleeding, which soon renders the circulation useless in the stump of medulla oblongata, to which it must be added that, in these animals, extensive wounds produce such a strong impression on the surrounding parts, as soon to reduce the stump to a pathological state incompatible with the exercise of its function.

In cold blooded animals however, the state of things is different. In these last, the most considerable mutilations produce limited consequences; the bleedings they cause are moderate and of short duration, and the wounds readily heal. We can therefore explain what was formerly known to be true, although its principles were not understood, how it is these animals can live without heads. I have decapitated a great number of salamanders, (a kind of lizards) many of whom survived this operation three or four months, and at last seemed to die for want of food, if we might judge from their excessive emaciation. I have constantly remarked that the decapitation in these animals was made in the cranium, anterior to the occipital hole. All those, on the contrary, which had been decapitated lower down, and upon the first vertebra, lived a much shorter time. There is no doubt therefore that the former lived longest, because they continued to breathe.

As pulmonary inflation is capable of supplying the loss of natural respiration; and as *animals decapitated* in such a manner that natural respiration may continue are capable of living till they perish from inanition, it should seem that pulmonary inflation might cause a warm blooded animal, decapitated in any way, to live as long as those cold blooded animals. But we must observe that the brain does not merely support the mechanical phenomena of respiration, for the peculiar function of

the lungs also depends on it, by means of the nerves of the eighth pair; and it appears that both the one and the other depend on the same part of the brain; for we have already seen that the part of the medulla oblongata, in which resides the source of the mechanical phenomena of respiration, contains also the origin of the eighth pair of nerves. Now we know that the division of these nerves alone, without any other injury, causes animals to perish more quickly than abstinence. We see therefore that, abstracting the other causes which may and must accelerate death in a decapitated warm blooded animal, the *maximum* of time, we can cause him to live by pulmonary inflation is that, which he might live after the division of the nerves of the eighth pair, and that an animal can never live so long after decapitation, as to die of inanition, unless he continues to breathe of himself.

Without here entering into farther details, what I have said is, I suppose, sufficient to establish, that the reason why the brain is indispensable to the support of life is, that it contains the prime mover of respiration. I shall inquire elsewhere if it exercises any other influence upon life. I say particularly *on life* and not on its acts, for there is no doubt that the greater part of these emanate from the brain.

As to the organs of the thorax and abdomen, it is evident, that their use is limited to the formation and circulation of the blood. Those of the abdomen serve to prepare materials, proper to repair the waste of this fluid, which the different secretions occasion. The lungs give to the blood its arterial character, and the heart distributes it to every part of the body. We must, therefore, consider the pulmonary inflation, practised on animals, as a condition necessary to the formation of arterial blood. But what relation, what connection is there between life and the arterial blood when formed and circulating in the vessels? It is certain, that life does not reside in the blood, as has often been said, and that the circulation does not constitute it essentially, since sensation and voluntary motion always continue a certain time after the heart has been plucked out, and in general, after the cessation of circulation. But it is also certain that this life, which continues when the blood no longer circulates or has lost its arterial qualities, never has a long duration. It seems that we may conclude from this, that life is owing to the impression

of the arterial blood on the body. But we have seen, that the brain and spinal marrow are the sources of sensation, of motion, in a word, of all that constitutes life. We may therefore say, that the general life, that the existence of the individual results from a certain impression of the arterial blood on the brain and spinal marrow, an impression which, when once produced, has always a longer or shorter duration, according to the species and the age of the animal; so that life cannot be maintained, but by the continual renovation of this impression. Much in the same way that a body, set in motion by a first impulse, cannot continue to move, unless that impulse be repeated at intervals. This being true, it happens that every time the renovation of the impulse is interrupted in any portion of the spinal marrow, the life of those parts that receive their nerves from this portion, must be extinguished; and with greater or less rapidity, according to the species and the age of the animal. This is what we actually observe when the aorta is tied in a rabbit toward the posterior part of the chest or anterior of the bowels. Sensation and motion subsist awhile in the hinder parts, but gradually become weaker and soon disappear entirely.

Continuation from page 328, vol. II. of

MISCELLANEOUS FACTS AND OBSERVATIONS.

[Communicated for the New-England Journal.]

OUR *second* illustration of our third general proposition, (namely, that medicines ought to be taken with their prescribed accompaniments,) will be derived from a circumstance commonly overlooked, respecting one of the solvents used for the stone.

After the British parliament, in 1739, had given £5000 to Mrs. Stephens, for making known her famous solvent, the sole merit of which lay in the lime and the soap contained in it, many experiments were undertaken by able men on this subject. By their means, the medicine was soon stripped of its disguises; and new combinations and modifications were made of its essential materials. Still something important remained to be done.

The medicine, in most of its forms, often disagreed; and yet to be successful, it was necessary to administer it in large quantities, so that a new ingredient was often called for to remedy this evil. This new ingredient was found in veal broth; but the veal broth seemed so trivial a part of the remedy, that it soon became neglected; and so it remains in general at the present moment.

To restore this article to its place, and to make it serve as an illustration of our object on the present occasion, a brief history of its first introduction into use will here be given: for next to having a good medicine, stands the privilege of being able to remove the common obstacles to its use.

Mr. Welsh, a country clergymen in Ireland, is said to have given for the stone and gravel, one of the ingredients in common soaps, namely, a *lye*, (or infusion,) of *vegetable ashes* in water; administering it for this purpose in *veal broth*. A certain Dr. Chittick, of Bath, is next reported to have received from General Dunbar a recipe for the stone; consisting not merely of *lye*, but of *soap*; lye or a solution of alkaline fixed vegetable salts, combined with quick-lime, which soap-lye was to be taken in milk; and upon the death of this Dr. Chittick, the recipe passed into the hands of his brother, a physician in London. But, by this time, the addition of milk was withdrawn, and veal broth was substituted; for the use which had been made of this broth in Ireland, was easily to be known from some of the many Irish travellers seen at Bath. Dr. Chittick, of London, the brother, availed himself of the secret in this state of it, to extort money from persons labouring under calculous complaints, after the manner of a true empiric. His patients were ordered to send him *daily*, in a covered tin vessel, (the patient having one key of the cover, and himself another,) *three pints of veal broth*, made after a certain rule;* and into this broth, he daily put a portion of his medicine. A pint of this medicated broth was ordered to be taken before breakfast, another pint at noon, and a third at night; and an hour was to be consumed in swallowing each pint; a fast of two hours following the dose. Though his medicine was made of the cheapest materials, yet this cruel man had the effrontery to demand for it two guineas each week; which be-

* The broth was made with two pounds of veal taken from the upper end of the neck piece, and boiled in five quarts of water, till two quarts were evaporated. Thus the veal was without fat.

ing a large sum in those days, excluded from the use of it not only all the poor, but even many in moderate circumstances; for he gave away the medicine to none, and insisted upon his pay at the end of each week; besides stipulating for a *considerable fee* over and above, when a cure should be accomplished.

Mr. Alexander Blackrie, a spirited man, who was a sufferer from calculous complaints, was irritated by such exorbitancy, and analyzed this medicated broth; and fully satisfied, not only himself, but the public, that the additions which the Chittick of London threw into this broth, consisted only of the cheap and common materials already mentioned. Mr. Blackrie, after various experiments, having improved the original recipe, settled it finally as follows:—Upon eight ounces of salt of tartar, and four ounces of quick lime which was newly made from oyster shells,* he poured a quart of boiling spring-water; and after shaking it occasionally, he, at the end of twenty-four hours, filtered it for use; the dose being thirty or forty drops, taken two or three times daily in half a pint of “*weak veal broth*,” or any other soft mucilaginous fluid.

This medicine, somewhat changed, but still under this guarded form, travelled afterwards to France; for the worthy President, De Virley, in March, 1787, stated that M. Durand, (a French practitioner,) of Dijon, had cured a patient of a calculous complaint, by doses of ten drops of caustic alkali, dropped into a *hint of veal broth*; the alkali being gradually increased, till forty drops were taken at one dose. This recipe, he said, came from a British physician.†

Thus we have discovered, that broth made from the lean part of veal, with its bones, &c. (or, in other words, that a long continued infusion of certain animal matters in hot water, when freed from superabundant fat,) may be usefully employed for rendering caustic and alkaline solvents for the stone and gravel, sufficiently innocent to the human constitution. Milk has been used with the same view; and in particular, it has been given by Dr. Whytt to soften lime-water, when lime-water has been used as one of the means for dissolving human calculi; but it is

* Dr. Whytt proposed in consequence of his experiments, that shells should be thoroughly washed, when they came from the sea, if intended to form lime to be used in solvents.

† See Edinburgh Phil. Trans. vol. II. Historical Part, page 22.

to be observed, that if these substances long remain mixed before they are drank, though the milk does not curdle, yet it acquires an acrid taste from the more complete diffusion and intermixture of the acrid particles of the medicine.

What remains to be said on the subject of this class of solvents for the stone and gravel, will be referred to a postscript—In the mean time we pass on to a third illustration of the subject under consideration.

This *third illustration* of our doctrine, that medicines are to be administered in the manner proposed for them, will be found in the exhibition of *muriated barytes*; that is, of *terra ponderosa* (or barytes) *dissolved in the muriatic acid*.

It may perhaps be remembered by some, that Dr. Adair Crawford (the celebrated author of a theory on animal heat, which is now attacked, perhaps only to become in the end more generally established;) wrote a paper on muriated barytes which he first introduced into our modern materia medica; having performed with it some cures which made a sensation at the time, as they occurred in a large public hospital in London, partly under the auspices of Mr. Cline. But notwithstanding Dr. Crawford's first successes, the medicine has since been abandoned by many; of whom some affirm, that it is an inert substance; and others, that it owes whatever virtue it may possess, to the muriatic acid which it contains. But perhaps the explanation of the whole circumstance lies in two facts; first, that the medicine has not always been properly prepared from the pure and proper mineral; and secondly, that even the proper medicine has been decomposed by the *impure water* in which it has often been administered; whereas Dr. Crawford desired that it should be given in "*pure*" water.

We know the delicacy of the affinities of the *terra ponderosa*, since it is made an important test and reagent for many chemical purposes. The extent of its affinities will be partly known from the following facts. Dr. Thomson, in his chemistry, writes thus of the *terra ponderosa* dissolved in the muriatic acid.—“Muriat of barytes (according to Fourcroy) is decomposed by the following salts. First, *all* the alkaline and earthy sulphates,* nitrats, and sulphites. Second, phosphats and borats of potash,

* Dr. Thomson has this note here. “According to Pissis, it does not decompose sulphat of lime nor sulphat of potash. Ann. de Chim. xv. 317.”

soda, and ammonia." "This muriat is much employed as a reactive, to detect the presence of *sulphuric acid*. When dropt into a liquid holding that acid in solution, an insoluble precipitate of *sulphat of barytes* immediately appears. Bergman informs us, that this *precipitate* is exceedingly visible, even when the acid amounts only to 0,000,2 of the liquid. Even when only 0,000,09 of sulphuric acid is present, a *slight cloud* appears in a few minutes after dropping in the muriat."* So far Dr. Thomson, who touches on the subject of muriated barytes in other passages.† This compound then, upon meeting with water containing any of the above articles (and probably various others) in sufficient quantity, ceases to hold the barytes in solution; and when the barytes appears again in a solid form, as there are not sufficient means to re-dissolve it in the stomach and intestines, the medicine loses its virtue and becomes inert; unless so far as the *muriatic acid*, which was joined to it, may remain in a state to prove useful.

Hence Dr. Crawford, in his private practice, not only directed that his medicine should be given either in *distilled water*, or in *rain or snow water*; but, lest it should be decomposed *within the body*, he desired that nothing should be eaten or drank to interfere with it. For this reason he gave it after a short fast of at least an hour, and desired that the fast should be continued for at least another hour after taking it; (so that it may in general be given an hour or two before dinner, and an hour or two after supper.) The water from various springs remains perfectly free from clouds, after receiving a drop or two of muriated barytes; the drop as it sinks down, drawing after it a long transparent colorless streak, (like the veins often seen in solid glass,) and soon becoming perfectly incorporated and like the rest of the water. In this invisible state, the muriated barytes is in a proper condition for the use of patients.

With the above attentions, muriated barytes will often be found performing the wonders at first attributed to it. It must be observed however, that the medicine has seldom any other *sensible* operation, than that of exciting sensations of warmth, and of increasing the appetite, and also of abating pain. Sometimes

* Dr. Thomson refers here to Bergman, i. 100

† For what we have here quoted, see his edition of 1802, vol. 2. p. 314, 315.

it can only be taken in the dose of *half* a drop ; (which may be measured by putting a drop into proper water, and taking the half of the mixture. It is prudent to begin with doses of a few drops ; as in general this medicine ought not to excite nausea or giddiness ; and few can take 16 or 20 drops, (even when used to it,) without its producing one or both these effects. The favourable operation of the medicine is sometimes counteracted by an inflammatory state of the body ; and hence a low diet, (especially of milk and vegetables,) often contributes to its success. Dr. Crawford considered muriated barytes as an evacuant, a deobstruent, and a tonic ; particularly in cases of scrophula.

The above paper by Dr. Crawford highly merits attention ;* and Dr. Hope's paper on strontian and barytes ought to be read along with it.† It will be seen from both authors, that many difficulties occur in procuring the true barytes ; and that great care is requisite in preparing the medicine in question. It is even doubtful, *whether Dr. Crawford himself* used the pure unmixed mineral, in the first instance ; and as he never had greater success than in his first trials, it would be fortunate could we procure the precise materials which he then used, prepared as he then prepared them.

Our *fourth* and last illustration of the principle, that every remarkable medical prescription deserves attention in all its parts, will be drawn from a very equivocal quarter ; but it may be treated in such a manner as not to be without its uses.

A certain John Morley, Esquire, an Englishman, of Halstead in Essex, in the nineteenth edition of his pamphlet on *Scrophulous Disorders*, (of which, in 1799, he affirmed that 14,000 copies had been circulated at home or abroad,) asserts, that the *verbe-*

* See Medical Communications, vol. 2. 301. London, 1790. As pure barytes may be rendered *caustic*, by exposing it in a crucible to a red-heat ; the author calls *distilled* water poured upon it when cold, by the name of *barytic lime water*. See p. 352. Dr. Crawford's paper was read Nov. 10, 1789. His first experiments on muriated barytes were in 1784.

† For Dr. Charles Thomas Hope's paper, see the abstract given in the Transactions of the Edinburgh Royal Society, vol 3. part 1. appendix to the History, page 143. It was read in November, 1793, in consequence of the discovery of strontian six years previously. For Dr. Withering's paper on the aerated terra ponderosa, see London Phil. Trans. for 1784. For the Memoir of Van Mons on this subject, see Journal de Physique, xiv. 297.

na officinalis, or common English vervain, is highly beneficial in this malady. Yet the great use which he made of this herb, was merely to direct a piece of the root to be kept constantly in contact with the skin over the stomach of *every* patient without exception; suspending it for this purpose from the neck by a ribband of satin, whose colour he desired might be "white," "because," he said, "the dye in some colours may be prejudicial." In various cases, it is true, he directed preparations from this plant in the form of infusion, of ointment, and of water obtained by cold distillation, ("like rose water,") to be applied *externally*; but in no instance whatever did he prescribe the vervain *internally*. Now, if Mr. Morley had some success in treating scrophula, which appears to have been the fact, few will think that the whole of his success was owing to the vervain administered in the above manner, and particularly where it was solely placed on the outer side of the stomach. Some of those *other* remedies, therefore, which Mr. Morley employed *in addition* to vervain merit our attention, since, from these, we may obtain important hints.

In scrophulous disorders, then, we find, that it was Mr. Morley's constant rule to begin by a *moderate* purge, which was to be from time to time, and in some cases even repeated *weekly*, during the whole term of the disease; the purge in general consisting either of jalap, manna, cream of tartar, or damask-rose leaves;* two of these articles being often mixed together in the dose. When the patient, *as was common*, did not possess an open body, he required *for the remainder of every week*, that two stools should, in general, be procured each day by means of a diet drink, or else of crude antimony excessively finely powdered, followed by an infusion of ground ivy or sarsaparilla, or by other simple methods. By way of a *preventative* also, he advised evacuating medicines for a month, "in spring or fall," in scrophulous habits. He gave to his patients few *internal* medi-

* Mr. Morley considered *Jalap* as particularly well adapted to scrophulous complaints; and though he often prescribed it in other shapes, yet he much recommends a tincture of it made with Geneva spirits; and he says, that children may take a few drops of it mixed with their food, when a laxative is wanted. The rose-leaves, some kinds of which are considered as purgative, were given under the form of a syrup, or of a decoction made with rennet-whey.

cines which were not laxative, unless on particular occasions; as when he prescribed sarsaparilla with liquorice, and now and then, (but very rarely,) *cicuta* as also millepedes. For tumours, sores, eruptions, &c. his list of *external* remedies was comparatively extensive, the articles of it being interchanged according to circumstances. Besides, the frequent-external use of vervain, he gave (as his grand remedy) *cicuta*; also, one or more of the following articles, namely, garden sorrel, elder, marsh mallows, parsley, carrots, groundsel, colts-foot, white nettle, (sometimes, he says, called archangel,) house-leek, root of white lilly, gentian root, root of polypody, burdock, spérmaceti with olive oil, salt-petre, cabbage-water, smith's forge-water, lime-water, goose-fat, oil of sheep's feet, flower of brimstone with prunella salt, given in one case to abate inflammation, tincture of myrrh, the inside of figs, mellow apples to restore color to the skin, poultices, gum-plaster, and a plaster made in a particular manner from white-lead and olive-oil; and he frequently employed rennet-whey, strained from its curd, skimmed milk, fine oatmeal, lard, &c. to make up his ingredients. For contractions of limbs, he advised what he called *egg-liquor*.* As to other remedies, we must refer to the book itself.

Thus, then, occasional and in some cases weekly purges and one or two stools, on days when no purge was taken, with outward applications, especially with *cicuta*,† formed the principal basis of Mr. Morley's practice. It may be added, that he rarely bled; never gave emetics; never blistered; used neither issues nor setons; in general opened abscesses by means only of poultices, very rarely suffering even the point of a lancet to interfere; avoided the knife and caustics in all cases; rejected purging salts as mischievous, and also bathing in salt-water; never recommended mercury, unless for a special purpose; directed

* This was made of the yolk of one new laid egg, beaten very thin; and six spoonfuls of warm soft water, added to it one by one, the whole being well mixed by further beating. With this liquor the affected part was rubbed three or four times daily, and five or six minutes at a time, by a warm hand; the part being kept warm afterwards with flannels.

† When *cicuta* was applied near the head, and affected it, as it was apt to do, he omitted it. He says, that "he used hemlock outwardly, numberless times, with great success."

neither Peruvian bark, cold bathing, nor any other *general* tonic ; enforced simplicity and cleanliness, and refrained from all desperate measures, being content with what he alone commonly obtained, namely, *slow cures*. By this statement we may more and more conjecture what were the principal sources of his cures, namely, an open state of body, and the plentiful external use of *cicuta*, which Stork had just before introduced to the notice of the public. Of his vervain we say nothing farther, except that it never seems to have done harm ; and when used alone, may be conceived sometimes to have produced good.

We may add, as personal information respecting Mr. Morley, that he is reported to have been a man of sincerity ; that he gave no directions to those who did not visit him, except such as could be found in his pamphlet ; and that he wished to receive, some days before hand, the details of the cases of all those who desired to see him. He had for patients, sometimes those who had gone the rounds of public Hospitals, or had been under the care of various regular practitioners. He says also, that many medical men sent him patients, sometimes their own children ; but that in other instances, they had often merely in view to get rid of the poor or of difficult cases, or to learn his prescriptions. He considered himself as not possessing equal advantages with those who frequently saw their patients, and could alter their mode of treatment according to circumstances, since he scarcely saw any of his patients more than once or twice. He seems not to have furnished his own medicines ; even the roots of vervain being often obtained by his patients from impostors, so that he could perform no cures by *concealed* methods : and, indeed, various persons became relieved merely by following the courses prescribed in his book. He professed, to have read much, and consequently to have been indebted for information to others ; and though he was by no means destitute of sagacity, he made less boast of it than might have been expected. As to fees, he received, indeed, no money ; but he took no pains to shun presents ; for the following are his own expressions given in his pamphlet. “Many, many guineas have been offered me ; but I never take money. Sometimes, indeed, genteel people have sent me small acknowledgments of tea, wine, venison, &c. : generous ones, small pieces of plate, or other little presents : even neighboring farmers a goose or turkey, &c. by way of thanks.”

As to *vervain*, it is treated very lightly both by Dr. James and Dr. Lewis, who, in their dispensatories, considers a little more than an inert herb; but in Dr. Quincy's dispensatory of 1769, we read thus:—"Vervain is chiefly distinguished into male and female. It flowers in June and July. It is of a subastringent and bitterish taste; is detergent and reckoned good in all indurations and obstructions of the liver, spleen, reins, and mesentery; but it is little used *inwardly*. *Externally* it is of great use in pains of the *head*, applied various ways: and Forestus gives an almost incredible instance of its virtues for this purpose, (lib. 9 Observat. 52.*)" It seems, however, that the result of Mr. Morley's praises of vervain was, to drive it out of all repute in England with regular practitioners, since neither Dr. Cullen nor the two Doctors Duncan notice it in their works, and the *Materia Medica* to say nothing of the silence of the *British Pharmacopœias*.

Mr. Morely states, that vervain grows very often in high-ways and court-yards, and in chalky, gravelly, and stony, uncultivated places. Millar, in his dictionary, relates a singular circumstance belonging to it which deserves mention, since it may apply to other articles much to the comfort of travellers:—"Although," says Millar, "there is scarce any part of England, in which it is not found in plenty, yet *it is never found above a quarter of a mile from a house*, which occasioned its being called *Simpler's joy*, or joy of herb-gatherers; because wherever this plant is found growing, it is a sure token of a house being near. This is a certain fact, but not easy to be accounted for."* Perhaps this supposed peculiarity procured for vervain the name of the *holy plant*, which Mr. Morley affirms to have been once given to it. Mr. Morley himself, in the engraving which he offers of it, entitles it the *common purple vervain*.

Much as has been written on scrophula, perhaps a table like the following, of scrophulous patients, has not often been given to the public. Our author says, that he selected it from a list of five thousand scorbutic, scrophulous, and cancerous cases, which were submitted to him during more than twenty years practice. By the table it appears, that more than three out of five patients were females; and from the pamphlet we further learn, that the

* Mr. Morley, in effect, partly accounts for this, by telling us in what places vervain is found.

disease on the one hand has been seen at the birth, and on the other, has broken out for the first time in one patient when in his eighty-sixth year. From the table, however, we learn, that nearly half of these scrophulous cases occurred between ten and thirty years of age. How far the disease was well characterized by the author, is not for us to decide at the present period, and which, in many instances, still defies medical treatment.

	<i>Males.</i>	<i>Females.</i>	<i>In all.</i>
Under five years old	77	89	166
From five years to ten years	108	117	225
From ten years to twenty years	212	309	521
From twenty years to thirty years	166	285	451
From thirty years to forty years	96	200	296
From forty years to fifty years	60	143	203
From fifty years to sixty years	37	63	100
From sixty years to seventy years	17	13	30
From seventy years to eighty years	3	5	8
From eighty years and upwards	1	0	1
	<hr/> 776†	<hr/> 1224	<hr/> 2000
		776	
		<hr/> 2000	
		<hr/> <hr/>	

The length of this illustration must be excused in the case of a disease which is often painful and hereditary, and frequently distressing on other accounts.

IV. We have now to speak of certain *transient swellings* in nervous or dyspeptic patients.

It is related in the sixth number of the New-England Journal of Medicine and Surgery, that a certain gentleman shortly before he expired, being raised in his bed, an enormous tumor was discovered on the side of the neck, as hard as a stone, and filling the neck almost from the ear to the clavicle; but on examining the body *two days after death*, to the astonishment of all, this great tumor had disappeared. This patient, it is to be observed, laboured under hypochondria, and had an enervated constitution. The following is a case of a tumor quickly arising, and which was quickly dispersed in the *living* body. The Princess Char-

† There is an error of one in this addition, and in the total sum.

lotte Elizabeth of Bavaria (who was married to that Duke of Orleans, who was Regent of France after the death of his brother Louis XIV.) writes thus of herself, in a letter dated February 25, 1716. "I am subject to disorders of the spleen. When I experience strong vexations, a swelling arises in my left side; which is *frequently* as large as a *child's head*." These cases are mentioned without consulting any of the collections of anatomical or medical records, which doubtless will furnish many confirmations of a fact, of which we ought to be able to assign the cause.

On this subject let us hear Dr. Whytt; who in his work on nervous diseases, has two passages applicable to different species of transitory swellings. "In hypochondriac and hysteric patients (says this author) I have observed *little swellings or elevations of the skin*, of a pale color and of different shapes. These *in a few minutes* acquired their full size, and *after half an hour or more* would quickly vanish. In hysteric women also we meet with soft *puffy swellings below their skin*; which, (because of their sudden *rising and disappearance*) have by *some* been ascribed to *wind* shifting from one part of the cellular membrane to another. But this is by no means probable: and both these puffy swellings and those risings of the skin, seem to be owing to the same cause; viz. an increased alternate motion of the *small arteries* of the parts, occasioned by an uncommon irritation of them or their nerves; whence there must happen an effusion of a serous or lymphatic fluid in the spaces of the *tela cellulosa* or in the intestines of the *skin*; which as soon as the extraordinary motion of the small vessels ceases, will be quickly absorbed; and consequently those swellings will disappear." Again we read in Dr. Whytt, as follows. "*Air in the stomach* being after hindered from rising by a slight spasm of the cardia (or lower part of the gullet,) either occasions an inflation of that organ..... or passes into the intestines; where (joined to what is generated there,) it distends them in some places; (and consequently occasions a contraction in others;) hence pain. And when the spasm gives way, the air (rushing through a narrow passage of some of the bowels) makes a rumbling noise; but when the spasm is greater or lasts longer than usual, great pain is occasioned; which is after attended with a vomiting. This is what is commonly called a *flatulent or hysteric cholic*. In some

cases, certain parts of the alimentary canal are affected with such a fixed spasmodic contraction, that scarce any air passes either upward or downward; and more being daily generated, the stomach and bowels become at length greatly distended; or *tympany* is produced. In this disease, I have several times observed the swelling of the belly fall greatly, and the disease go almost quite off; while in the mean time *very little wind was discharged*. (This shews, when the alimentary canal returns to a sound state, that not only less air is generated from the food; but what has been produced may be mostly destroyed or reduced to a more fixed condition."*)

As to the *globus hystericus*, we know that the œsophagus is easily dilated, since it always enlarges when we swallow our food. When wind therefore rises into it from the stomach, it is just as easy for it then to be dilated with *wind*; as it is easy for it to be dilated, at other moments, by our descending food.†

V. Of an *anomalous* swelling.

A young woman, below the collar bone and toward the left shoulder, had an elevation in the skin; which was circular; and

* See Whytt's work on Nervous diseases, 4th edition, p. 572, 573, and 591—593. It must be observed that these extracts are made from old minutes.

† In apoplectic diseases there often seem to be temporary effusions of fluid in or upon the brain, which disappear before they are searched for by the dissector; and especially *if the head be separated from the body before the examination*; conformable to what Cotunnus has observed in his pamphlet on sciatic complaints. The blood and other fluids appear also from many facts to be capable of many effusions and some absorptions, or at least of some variety of distribution or appearance, *after death has taken place*.

The generation or subsidence of wind in the alimentary canal of men and beasts, is often sudden and remarkable. The case of hoven cattle is well known; that is, of cattle swelled by eating largely of new clover. The remedy by the rope, the knife, and still better by the trocar and its canula, give sufficient proof of the existence of wind in these cases; but this affection may not only be cured by the mechanical methods just mentioned, but by such as are medical or chemical. Some farmers pretend, that half a pint of melted hog's lard mixed with a like quantity of molasses, and swallowed, will quickly relieve the animal; while others recommend a mixture of egg, soot, salt and pepper, for the same purpose. Doubtless many methods of this kind might be discovered by men of science, which would ensure success, and yet be very simple.

which had the diameter of a small dollar, but with less thickness. In its centre, was a second elevation of similar thickness; but of which the diameter was only equal to that of a quarter of a dollar. Each of these concentric elevations was thin at the edges; each also had a smooth surface; the color of each likewise when seen by candle-light was of a dusky red, as if formed by very small dots; and ramifications were felt below the skin in the part affected. These elevations had been forming during a number of weeks; and were at last attended with considerable pain, as well as with fever and want of sleep. A man of middle age had been seen some years before, with a *circular* tumor on his right cheek; which was of the thickness of several dollars; and had a *flat* top, with a raw surface; from which fell drops of blood. As these cases resembled each other in some points, they might in time resemble in more; and the dread of a complaint which might in time become like the *fungus hæmatodes* of Mr. Hey, led to a recommendation that the patient should visit Boston for early advice. In the mean time, muriated barytes and cicuta were given, and an open body recommended. But luckily in a day or two the patient embarked for Boston; and, though she did not proceed far in her voyage, the motion and the stench from the vessel, produced nausea and puking, which seemed to lay hold on the malady. The swelling which by this time had immensely increased, proceeded till the skin broke; and then discharged green matter. The patient now landed; and entering a carriage, was found upon her arrival at Boston cured of the attack, at the end of about ten days from the time when she first applied for advice. Her general health is now as usual, though she has still occasional pains in the part, especially near the scar.

Her complaint seemed too indolent for phlegmon; and by the event it appears to have had no alliance with other more dreadful diseases. The patient however has been afflicted with scrophula, and scrophula has prevailed with other members of her family. We shall make no farther remark as to the *nature* of her malady; except that it is not every thing singular, which ought to create alarm.

As to the nausea and puking; the skin broke in the weakest part, and the neighbouring vessels were called into more effect-

ual action, by the exertion. The general system also was favoured both by the evacuation of the stomach, and by the stimulus communicated to every part of the body.

COLLECTIONS IN MORBID ANATOMY.

No. III.

ORGANIC DISEASE OF THE HEART, WITH DISSECTION.

BY JOHN GORHAM, M. D.

THE subject of this communication was a negro of an athletic form, and apparently about forty years of age. He came under my care in March, 1813. He entered the almshouse in December, 1812, for a syphilitic complaint, and had been attended there by Dr. Jackson, for cough and difficulty of respiration, increased by exercise and by lying in a horizontal position; these were accompanied with a tense, frequent, and occasionally an irregular pulse, swelling of the abdomen and feet, pains about the neck and shoulders, and paucity of urine. No pulse could be perceived in the right arm. He had been treated with quicksilver, expectorants and diuretics.

The symptoms when I took charge of him were more developed. The cough was harsh and incessant, accompanied with expectoration of frothy mucus, constant dyspnœa, violent palpitations of the heart, frightful dreams, from which he awoke in extreme terror and with a sense of suffocation; pulse irregular and often intermittent, swellings of the lower extremities and abdomen, and, a few days previous to his death, of the face and upper extremities; distressed and harassed countenance, urine high coloured and very small in quantity, and total want of appetite. He uniformly complained of pain and great distress at the stomach. On the eighth of April, his pulse though irregular was faint, I prescribed some medicine for him, but in five minutes he was dead.

Examination of the body twenty-four hours after death.

The left side of the thorax when struck resounded; the sound returned from the right side was like that produced by striking a solid substance. The muscles were of a dark colour. On opening into the thorax, the right side was found filled with

transparent yellowish serous effusion. On the anterior and superior portions of the lungs were signs of slight inflammation. There was no adhesion and the organ was apparently healthy. When divided by the knife, a considerable quantity of frothy, blood-coloured fluid issued from the cut surfaces.

The left cavity of the lungs contained six or eight ounces of yellowish fluid. The lower portion of the lung was sound; the upper portion was white and crispy, and adhered by two membranous bands to the mediastinum; when cut into, it presented the same white appearance and was much less firm than the other portions.

The substance of the pericardium was not thicker than usual. On its upper surface, there had been an effusion of lymph which had formed a tough and elastic, but thin membrane, about one inch in length, and half an inch in breadth. When opened, the cavity was found to contain about six ounces of a pellucid, serous fluid. The heart thus brought into view appeared nearly of twice the natural size and very turgid. The coronary veins were exceedingly distended, distinct and prominent. On the superior surface there were appearances of effusion of lymph, particularly around some of the smaller veins, the coats of some of which were white and much thickened. The right auricle and ventricle were distended with coagulated blood, the semi-lunar valves of the pulmonary artery were sound. The left ventricle was filled with blood, for the most part fluid, its walls were thick and firm; the semi-lunar valves of the aorta were completely ossified and the aorta itself was thickened, and its coats filled with osseous matter from its origin in the heart to beyond its arch. The mitral valves and the coronary arteries were sound.

Abdomen. The colour of the liver was lighter than usual. On the convex surface near the suspensory ligament, there was a small effusion of lymph and a greenish coloured tumor, about the size of a bean, filled with a fluid resembling, in every respect, bile. The gall bladder was of the usual size and its duct pervious. The texture of this organ was natural, but when divided a blood coloured fluid oozed out in considerable quantities.

The stomach was large, much thicker than usual, and its internal coat highly inflamed, in some parts presenting the appearance of a diffused redness, deep coloured, in others of innu-

merable minute specks of a chocolate brown, and the whole surface was covered with a thick, tenacious, whitish matter, resembling an intimate mixture of pus and mucus. With the exception of this substance, this organ was empty. The small intestines discovered signs of slight inflammation. The mesenteric glands were enlarged, the spleen and pancreas sound. The cavity of the abdomen contained two or three pints of clear yellowish fluid.

Cranium. The vessels of the membranes and brain were not unusually distended, and the only circumstance observed, which requires to be mentioned, was the effusion of serous fluid in considerable quantity into the ventricles.

The appearance of the stomach satisfactorily accounted for the constant pain and anxiety experienced by the patient in the epigastric region.

CASE OF DISEASE OF THE HEART, IN A LETTER FROM DR.
JONH P. BATCHELDER TO J. C. WARREN, M. D. DATED

Charlestown, N. H. September 1, 1813.

DEAR SIR,

I TAKE the liberty to state a case to you, which struck me as one that had not often been detected in so young a subject. Of late, it is true, the attention of the medical world has been much attracted toward the diseases of the heart; and your labours, Sir, have contributed not a little to produce that effect.

The cases related by you and others, have been mostly adults, while the evolution of those diseases in the infantile state has either not been suspected, or has escaped the observation of physicians. From the similarity of the symptoms in the case about to be related, to those I have before met with in practice, I am inclined to think, that diseases of the heart occur much oftener in the infant state, than has been suspected. The case alluded to, was an infant four months old. From the birth it had been troubled, at times, with a difficulty of breathing, palpitations of the heart, and an increasing cough. Its breathing, when laborious, was accompanied with a peculiar sound. It

could never bear an erect or sitting posture. The position in which it experienced the most ease, was on the right side, partly inclined on the face, or directly on the face, with the head and shoulders incurvated. At the age of two months, our little patient was assailed with a most troublesome and obstinate cutaneous eruption, which might be considered almost epidemic in this part of the country, during the latter part of winter and spring. About a fortnight before he died, the eruption began to go off, and at the time of his death, it had almost entirely disappeared, leaving only its sequelæ behind. On Tuesday all the symptoms were greatly aggravated; Wednesday they were very alarming, and continued to increase with some intervals of ease, until Saturday about noon, when the child expired. During the paroxysms of distress, it was painful to behold him. At times the temperature of the body and of the head in particular, was considerably increased, but, for the most part, the body and extremities were cold and covered with a clammy sweat. He was frequently affected with syncope, which sometimes appeared more like extreme prostration of strength, than real fainting. At other times he was affected with agitations, which very much resembled convulsions. On Sunday the body was examined. We found some water in the ventricles of the brain, more than usual, I should conjecture; the exact quantity, however, could not be ascertained for reasons soon to be mentioned; the blood-vessels were turgid; and there were some slight appearances of the cream-like matter which is the result of inflammations about the brain. It is to be regretted, that a nice dissection of the brain could not be made, on account of the derangement that organ suffered, in consequence of the violence we were obliged to use in removing the cranium, which adhered so firmly to the dura mater at the sutures, as to render it impossible to separate them without the knife. Whether this strong adhesion was natural or the effect of disease, I am unwilling to decide positively, having never before seen the skull of an infant raised. Besides the disproportionate heat about the head, there were so many other symptoms indicating an affection of the brain, as to induce the family and the two attending physicians to believe, that the seat of the disease was in the head. The parents the more readily adopted this opinion, as they had lost several children, affected in a similar manner, whose diseases

had been considered by their physicians, affections of the brain. The lungs were perfectly collapsed and natural. Not the slightest adhesion could be found. The pericardium was discoloured, and contained about an ounce and an half of sero-purulent fluid. The whole surface of the heart was covered with a flaky purulent matter. The substance of the heart appeared natural. In the ventricles were formed what I shall call polypi, for want of a more scientific name. That these had been formed previous to the child's death, I have but little doubt, as they had considerable strength of texture, and adhered so firmly to the *columnæ carneæ*, that they could not be separated without tearing their substance. The contents of the abdomen were all natural except the liver, which was very large in proportion to the other viscera. The gentlemen present were of opinion, that this was a morbid enlargement of the liver. It struck me as the "sanguineous engorgement" of the liver, mentioned by M. Corvisart, as frequently occurring in diseases of the heart from an obvious cause: an incision into its substance corroborated the opinion. Do enlargements of the liver in affections of the brain proceed from the same cause? Is the circulation in some affections of the brain rendered slow and intermitting, by a direct sympathy between the heart and an oppressed brain, or only through the instrumentality of the lungs? What is the reciprocal influence of the brain and heart upon each other in disease and in health? We see patients with diseases of the latter, subapoplectic for days and even weeks before death, as happened in a case I witnessed the last spring. Does the enlargement of the liver, in our case, explain the reason why the child preferred the posture before mentioned? A transudation of bile had given a part of the arch of the colon a deep bilious tinge. Absent on a journey I did not see the patient until the day but one before its death. From the symptoms and history of the case, I was of opinion, that the principal seat of the disease was within the thorax. Its precise character I could not determine. I advised to the application of a blister upon the breast, and the use of the tincture of foxglove, which seemed to give a temporary relief.* The disease of the head, if any such existed, I considered second-

*In diseases of the heart I have seen great relief, and even the disease apparently kept at bay, by the foxglove alone, or by a combination of it with squills-soap, opium, and calomel in form of pills.

ary, knowing that the brain, the heart, and the lungs may be all secondarily affected, when the principal seat of disease is in either, and also that they may be similarly affected when the primary seat of disease is in the skin.

The nature of diseases of the heart, together with their causes and connections with diseases in other parts, have become a very interesting subject of medical investigation. It is not long since the faculty, in general, have begun to suspect them; and for the most part they are, at present, considered incurable. But when we recollect how many other diseases have been so considered, which are now very manageable, we must not despair of finding a cure for this formidable, and most distressing class of diseases. By ascertaining their remote causes, may not physicians be able to *prevent* them? By learning to detect and distinguish their proximate causes in their earliest stages, or by tracing their connection with other diseases, may they not discover the clue which leads to a successful method of treatment? The epidemic which prevailed among us last winter and spring, was very successfully treated by emetics sudorifics, epispastics,* and a judicious application of external warmth; and, from observation and some dissections I have had an opportunity to make, I am convinced, that the *heart was more or less the organ principally affected, in almost every severe case*. As the same torpor upon the surface, coldness of extremities, clammy sweat, small, frequent, and often irregular or intermitting pulse exist in many, if not all the diseases of the heart, may we not, reasoning from analogy, infer that similar remedies may be useful in a generality of those cases? I have a patient now under my care, laboring under a chronic disease of the heart, who has been invariably relieved by the means above mentioned. Dilatations of the heart or aorta, ossifications of the valves, or any other cause of obstruction to the blood in its passaget hrough the pulmonary or aortic systems, produce strong palpitations of the heart, and

* Having observed, that no patient died where a strangury had been produced by cantharides, I was disposed to give it internally, when a free external use did not bring on a strangury. The practice succeeded perfectly. By producing a strangury, we made a diversion in favour of parts more immediately essential to life. The strangury was distressing to bear, but nothing was to be feared from it, it being under the controul of medicine.

irregular or intermitting pulse, while in simple inflammation of the heart, its irritability being increased, a smaller quantity of its natural stimulus causes it to act; hence the very small and frequent pulse, which accompanies that state of disease.

When I reflect that a perfect knowledge of the reciprocal influences of the heart, the lungs, and of the brain upon each other, is necessary in order to establish a just theory of their diseases, and to do away the intricacy in which some mixed affections of the brain, (as concussion with compression,) are involved, I cannot close this long letter without expressing to you, Sir, a hope that anatomists and physiologists, who have frequent opportunities of making dissections, will not rest from their labours until they have completely unravelled the chain of sympathies which exist among those noble organs, and also between them and the skin.

With sentiments of respect and esteem, I have the honor to be, Sir, yours, &c. &c.

JOHN P. BATCHELDER.

DR. WARREN, JUN.

ANIMAL MAGNETISM.

[For the New-England Journal of Medicine, &c.]

AMONG the most extraordinary articles of news from Europe is the account of the revival of a doctrine, which some thirty years ago excited great attention; but has since been viewed as one of the remarkable impositions on the credulity of mankind. In the Parisian Journal of Medicine we find a review of the work of M. de Puységur, entitled "Physiological Experiments and Observations on Man in the State of natural Somnambulism, and in the State of Somnambulism excited by the Magnetical Act." In this review, the doctrines of M. Puységur are opposed, although with evident reluctance and embarrassment. But what seems more astonishing is, that Dr. Gall, in his great work on the brain, after explaining and opposing the opinions of the magnetizers, actually admits the existence of the animal magnetic fluid. In order to give some notion of the doctrines of the magnetizers, we shall first extract a part of Gall's work and then add some cases from the French Journal.

We shall present, says Dr. Gall, some axioms on the magnetic fluid, which are truly Mesmerian.*

"The magnetic fluid is a gaseous substance, the existence of which is demonstrated by its phenomena, without our being able to see or feel it.

"This magnetic fluid is diffused through all nature ; and it is called ether by the Mesmerists.

"It possesses a contractile and expansive property and produces the vital motion, and each particular life of bodies ; each action is a result from this fluid, for example, hunger, thirst ; it is the cause of every spiritual faculty, of every wish and inclination. Life itself is not a mode of the matter of bodies, but a mode of the magnetic matter.

"Magnetism is the state of perfect equilibrium of bodies. We can produce no sensible effect by magnetizing but on bodies that are disordered ; in whom the magnetic state is disturbed. In the man who is perfectly well, no effect is produced apparently, but the magnetic fluid must produce an alteration in every body, with which it unites.

"The patient magnetized by an action exerted on him acquires a developement which may be called *supernatural*. There are many degrees ; the first is followed by sleep, by involuntary spasmodic motions, more or less violent ; then comes a calm ; the magnetized person opens and shuts his external senses at the will of the magnetizer, obeys him in every thing, in a word, becomes changed like the magnetized needle. In this state, he answers questions proposed on the occult phenomena of man in the state of waking.

"Thus far the magnetical fluid acts on bodies in which it is placed, by reason of the laws to which these bodies are subject. True and well instructed Mesmerists say, that it is a revolting absurdity to advance that the magnetical fluid can denaturalize the optic nerve to form an auditory nerve of it. They say that the magnetized man has only the knowledge, without having precisely the determinate impression of hearing, of seeing.

"But in the most elevated degree, the state of perfect somnambulism, the animal faculties are independent, or nearly so, on

* Mesmer was the principal supporter of this doctrine, when it formerly prevailed in France.

the organic faculties. Somnambulism therefore results from the concentration of the animal faculty."

It would require too much time to enter into a circumstantial detail of the opinions of M. de Puységur and his followers. We therefore confine ourselves to saying that the opinions of M. de P. differ from the Mesmerian theses we have just laid down, inasmuch as that he considers it useless to know whether the magnetical fluid exist or not. "Animal magnetism," says M. de P. "is not an action of one body on another body, but the action of thought on the vital principle of bodies." He wishes us to believe the following proposition. "My will, the mover of all my actions and all my determinations, is equally so of my magnetical action. The whole doctrine of animal magnetism is contained in two words, *believe* and *will*."

All the sects of animal magnetism agree in one point, that it is in perfect somnambulism, that our soul is acquainted with the exterior world without the intervention of the senses, and by the magnetic fluid alone or by the will. But there is a doubt which has never ceased to torment us. Is it, we ask, not only the prison or the body but also the whole world that is luminous, transparent or recognizable by the soul; or is the exterior world incorporated with the magnetic fluid or the *mental will* of the magnetizer and transmitted to the soul of the somnambulist? The *lucidity* of M. d' Aremburg does not enlighten us. It took place in regard to his health only; he saw, or rather he *knew*, to a wonder, the whole anatomy of his interior body; but he could not walk alone, nor did he reply to the mental, or if you please, magnetical *wills* of M. de Puységur. It is extremely desirable that M. de Puységur would publish this secret anatomy, which has been revealed to him by M. d' Aremburg.

It may be suspected that we mean to deny the magnetic fluid, but this is not at all our intention. The naturalist acknowledges no law, but that of truth. We admit the existence of a fluid, which has a special affinity with the nervous system, which may emanate from an individual, pass into another, and collect, by virtue of its particular affinity, in some parts rather than in others. An observation which one of us (Gall) accidentally made on himself confirms us in this opinion, independently of all the true phenomena of magnetism.

Having, in the midst of reflection, laid the hand on the forehead, and carried several times the extended fingers backward and forward all over the hairy portion of the fore part of the head, at the distance of an inch, he remarked between the hand and the superior part of the cranium a gentle warmth like that of the breath; he perceived a heat ascending towards the shoulders and cheeks, a heat in the head, and a chill in the loins. The same thing being renewed many times excited his attention, he designedly repeated the experiment and always had the same results. If he continues to move the suspended hand, during some seconds, the phenomena mentioned increase. The eyes become painful and tears start from them. The tongue cannot articulate, the muscles of the face assume spasmodic actions, the respiration becomes painful, and he heaves many sighs, which are accompanied with oppression. The knees tremble and totter; he requires some hours of repose to recover himself.

He has frequently produced similar phenomena in other persons, who were not attending to them; and merely by the motion of the hand continued for some time. He has even produced deep and prolonged swoonings. He has, with regard to this property, a particular affinity with those of both sexes, who have fine and slightly curled hair. They alone are capable of acting on him; and he distinguishes, by means of this singular impression, whether it be an individual of this sort, or any other person in a large company, who, at a determinate distance, carries the hand in the air above the superior anterior part of the cranium.—*Gall sur le cerveau*, p. 146, &c.

Such are the opinions of Dr. Gall on the existence of the animal magnetic fluid. He has certainly been unwise in publishing them in his work on the brain; for whatever respect we may have for his anatomical discoveries, yet opinions, like these, must render us very suspicious of his physiology.

We shall now introduce, from the French Journal, some of the facts, published by M. de Puységur in support of his magnetical opinions.

A domestic, aged about thirty-six years, had for a long time a slow fever, which gave his master uneasiness. M. de Puységur proposed to them to magnetize him; they consented to it. As the patient had no idea of magnetism, M. de Puységur, in order

not to influence his imagination, engaged him only not to allow himself to be touched, in order, he said, to discover if he had any *obstruction*.

In two or three minutes this man fell into a state of most calm somnambulism ; they asked him if he felt well—he answered yes : but was unwilling to remain in this situation, as his duty called him elsewhere. He was thus magnetised three other times, and at the last awoke of himself, *an effect always indicative*, says the author, *of a radical cure*. In short, he was then perfectly recovered ; eighteen months after, he still enjoyed perfect health.

A park keeper was submitted to the magnetic action, for deafness of one ear only. At the end of some minutes he experienced *some slight nervous motions*. The hand having been gradually let fall on his eyes, he found his eyelids to close, in spite of himself. “It is curious,” he exclaimed, “I can no longer see distinctly, I am not able to open my eyes.” He experienced the same effect, for three succeeding days, that the treatment was continued ; by that time he was cured of his deafness, and became insensible to the action of magnetism.

A girl about twenty, of a delicate constitution, and naturally inclined to drowsiness, found herself so much better under the influence of magnetic somnambulism, that she wished never to be out of it. One time, among many, she wished to remain under it four days together ; another time, being in this condition, she said she required an emetic, and added it would be necessary to give her seven grains at a time in a glass of water. They refused her this at once, the dose appearing too great ; but as she insisted much on the necessity of its being administered to her, she was asked, (always during her magnetic slumbers,) what would be the effect of so violent a remedy ? She answered, I shall sleep tranquilly six hours together ; I shall not vomit once ; violent cholicky pains will awake me ; I shall have one stool ; after which I shall not feel so benumbed, and I shall not have any further need of being so long *en crise*. “Under this assurance,” adds M. de Puységur, “I administered to her seven grains of the emetic myself, and every thing happened as she had predicted.” We have preferred quoting the above cases as they are very short. The small space allowed us does not permit us to relate many others which would necessarily suffer by being abridged.

We also regret that we are not able to trace the history of this peasant of Buzancy, who, M. de Puységur has submitted for a long time to the observation of many very learned physicians and who has astonished every one of them, by the exactness with which she predicts the return of various symptoms more or less extraordinary, which were not susceptible of imposition.

We shall devote the small space which remains for us to an observation more concise and perhaps not less curious, and shall borrow as far as possible the very expressions of the author.

It is, says he, about two years and a half since, that Mad. de B. whom I had the honour of knowing slightly, sent hastily for me to come to her house. Having obeyed the summons, I asked her its object—Last night, she replied, many persons here who did not believe more in magnetism than myself, sent each other jokingly a challenge to be magnetized. My child and myself were of the party; M. de V. with whom you are acquainted, had no sooner directed his finger toward my daughter, who on her part did the same to him, than she gave a shriek, fell back, and was seized with terrible convulsions—Poor V. was in despair. He did not know how to repair the mischief he had done, my poor child would not permit any one to approach her, I made her suffer when I touched her.

Seeing this, we resolved to leave her alone, and it was not till all had retired, that she began by little and little to recover her tranquillity. As she was perfectly calm and well when she went to bed, I believed we should hear no more of it in the morning.

But on raising herself, new convulsions seized her. Under the hope which M. de Puységur gave to this afflicted mother of relieving her daughter, she applied to him, and permitted him to magnetize her. At the end of two minutes her eyelids closed, and she entered into a state of most perfect somnambulism. The mother easily alarmed, believed she was dead, and the magnetizer had great difficulty to prevent her throwing herself on her, before he had time to establish between them a mutual relation. This relation once established, "speak madam," said he to her, "she will answer you." "My child, my dear infant?" What do you wish, mamma? Ah! what happiness, cried she, she understands me! How do you find yourself?

Very well, mamma. But why do you not open your eyes? After about half an hour, adds the author, I awoke the young person, who immediately smiled on her mother, and made her participate in the pleasures, which she herself experienced. Rejoiced at a result so satisfactory, Mad. de B. engaged me to return to produce a similar effect the next day.

That day, during her magnetic sleep, M. de Puységur, seemed for some instants not to attend to her, in order to speak with her mother. She then groaned, the magnetizer having returned to her asked her, what she had just experienced. I know nothing. But you complained? You have appeared to suffer? Yes; something has hurt me. Ah! what was it? You. Me? How then? You left me. At present how do you find yourself? Well; I no longer suffer. This sort of sympathetic relation, or understanding between the magnetised and magnetiser, produced great inquietude in Mad. de B. And she would scarcely consent to have the treatment continued. These fears daily increasing, she one day said to M. de Puységur, "I do not understand this effect which you produce on my child, but it is very wonderful; for these two days you have seen her, she has followed you into the street from your house, here; she knows to a minute the very moment you will arrive; she tells me this, and immediately I hear the knocker of the great door." In short, after five sittings, the treatment was stopped to the great detriment of the young sufferer, as the author afterwards heard.

We should not give a just idea of M. de Puységur's work, if we presented it as a simple collection of facts merely; these facts are connected together by reasonings and theory, which is partly peculiar to the author. But we have not thought it our duty to stop here; in the first place, because M. de Puységur himself does not attach to it much importance; and because we are convinced, that a complete theory of phenomena so extraordinary, and against which doubts are so natural, might be premature.—*Journal de Médecine, Feb. 1812.*

AMPUTATION OF THE THIGH AT THE ILEO-FEMORAL ARTICULATION, &c.

Successfully performed by M. Baffos, adjunct Surgeon at the Hospital des Enfants malades, and at that of Madame Necker, in Paris.—*From the Bulletin de la Faculté de Médecine*, No. III. 1812.

[Translated for the New-England Journal of Medicine, &c.—with remarks, &c.]

BARTHELEMY LAILANDER, an orphan, of about seven years old, was admitted into the Hospital des Enfants, on the 24th of September, 1811.

This child had a cicatrix on the articulation of the great toe and first metatarsal bone, which was the remains of a scrophulous affection, which was nearly healed.

He had on the superior, anterior, and external part of the right thigh a smooth, hard tumour, which was without fluctuation, and had not changed the natural colour of the skin. We were unable to ascertain, either from interrogating the patient, or from any other information which we could obtain, whether this tumour had been occasioned by an external-injury. I was easily satisfied, that it proceeded from a disease of the bone, which had already arrived at a very advanced stage. From being indolent when he first entered the Hospital, it soon became exceedingly painful, especially towards evening. His appetite diminished, symptoms of fever began to appear, accompanied with watchfulness, loss of flesh, &c. &c.

The disease was now making rapid advances, and being well convinced, that nothing could arrest its progress, I thought of an operation which, though extremely hazardous and painful, yet gave me the only chance of preserving the life of the child, and putting an end to the excruciating tortures which a lingering death would otherwise be sure to occasion. The tumour occupied more than the superior half of the femur, comprising even the neck of the bone; for the great trochanter was lost in it. The facility with which I could bend and extend the thigh, induced me to think that the articulation did not participate in the disease.

However, before I determined to put into execution the project which I had contemplated, I was desirous of obtaining the advice and consent of the professor to whom I owe so much gratitude, and towards whom, I feel a veneration, equal to the particular friendship with which he has honoured me for these fifteen years. I accordingly removed my patient to the Hospital de la Faculté; and M. le Baron Dubois, after having carefully examined the child, and seeing his wasted condition, the ease with which the blood might be commanded, and the certainty of removing the disease altogether, by the separation of the femur from the hip bone; being convinced that the operation promised good hope of success, and that the disease, if left to itself, would most assuredly terminate in death, advised and encouraged me to perform it. The patient was conveyed back again to the Hospital des Enfants.

Two or three days after, I requested M. le Baron Larrey to give me his advice on the subject, who, after having attentively visited and examined the unfortunate child, did not hesitate in advising to the operation.

I performed the operation on the dead body many times in the several different ways in which it had been proposed, and on reflecting on the advantages and disadvantages of each of them, I determined upon that of Mr. Larrey, which he had himself performed three or four times; with this difference, however, viz. of compressing the crural artery so as to preclude the necessity of making the ligature, until after the amputation was finished; although as has been advised by Volher and Puthod, Mr. Larrey begins by laying bare and tying the artery.

I performed this operation on the third of last January, in the presence of a great number of pupils, and particularly aided by my friends M. Danyau and M. Abraham. Their presence inspired me with new courage, as I was convinced, that I could place the greatest reliance on their friendship and advice.

The patient was laid horizontally upon a bed, a little elevated, the pelvis placed obliquely, having his left leg hanging, and supported by one assistant, and his right extended and supported by another.

Mr. Danyau, situated at his left side, placed the thumb of his right hand upon the crural artery. Seizing his thigh with my left hand, I moved it a little, that I might observe the most

proper part of the articulation in which I should plunge any instrument. When I had ascertained it, I took a sharp pointed knife, with a straight blade, about eight inches long, and six or seven lines wide, and pushed it boldly into the superior and anterior part of the thigh, at the external side of the artery, I brought it out behind diametrically opposite to the place where it entered. I made an incision along the bone, about four fingers long, and then turning my knife, I made a horizontal section, by which I finished the internal flap. Mr. Danyau instantly took this flap in his left hand, and was thus enabled to prevent all hæmorrhage. I immediately exchanged my knife for a straight bistoury, with which, I opened the articular capsule, and cut the round ligament which enabled me, by a strong abduction to luxate the femur. Taking again my first knife, I carried it behind the head of the bone in order to make, at the height of the great trochanter, a horizontal section, by which I formed the external flap. After this, with a probe armed with a double thread, I tied the crural artery and all the other smaller vessels whose bleeding rendered ligatures necessary, of which I found but seven or eight.

The blood which was lost was not more than four ounces, and the duration of the operation, not including the time employed in tying the arteries, was about thirty or forty seconds.

The dressing consisted in the application of a good piece of agaric to the bottom of the wound, directly before the cavity of the articulation. The internal flap was applied over the piece of agaric and made to unite with the external by adhesive bandages. Some lint, long compresses, and a simple retaining bandage completed the dressing, and the patient was conveyed to his bed.

We wished afterwards to proceed to the dissection of the limb, but we thought it would be more useful to prepare the diseased bone, and submit it to the examination of the students, which preparation Mr. Pinson had the goodness to undertake. I intend to deposit these two bones in the cabinet de la Faculté; and it will be seen, that the disease occupied the greater half of the femur, that the tumour is formed by an homogeneous, fatty matter, as it were cartilaginous, and in its middle that the external face of the bone, is covered with a roughness and ossified points.

The femur, sawed in two pieces lengthways, presented nothing remarkable, except that it is diminished in thickness, on account of the wasting of its compact substance.

The head of the bone, the round ligament and the cotyloid cavity, were all in a healthy condition.

I will not enter into the detail of the description of this disease, because a more correct and exact idea of it will be obtained by examining the two pieces which will be deposited in the cabinet de la Faculté.

The sufferings of the little patient seemed to be very great, from the cries which he uttered. We gave him an antispasmodic potion with laudanum, of which mixture he took twenty-four drops in fifteen hours.

During the three first days, he suffered a little, and had a slight degree of fever. On the third day I took off the dressings. After removing the adhesive bandages, the two flaps of the wound being united, I separated them a little at their inferior angle, that I might draw away the agaric which I had previously taken hold of with the forceps, which was done without pain or difficulty. I again applied dry lint and two or three adhesive bands. The suppuration went on well, and was of a good kind. The wound has never been very large.

Some of the ligatures came away about the eighth and ninth days, and on the twelfth I found that of the principal artery among the dressings.

Perhaps it might be proper to add in this place, some reflections on the nature of the disease, the different modes of operating, and on the circumstances which are more or less favourable to the success of the operation; but I shall refrain from doing it, because I only intended to present to the Society, the observation of the first success of the amputation of the thigh, at its superior articulation, performed while the limb was entire.

FRENCH EDITOR'S NOTE.

We understand, to day, the fifth of May, that the boy who has been the subject of this observation is just dead. The examination of the dead body will be published word for word, in the Bulletin of next month.

Subsequent Note.

A note showing the termination of the operation of the amputation of the thigh at its articulation, performed by Mr. Baffos, and inserted in the Bulletin No. 3, 1812.

The wound healed, the health of the child was good, and every circumstance promised most pleasing and perfect success. They had already begun to think of sending him from the Hospital, when, on the sixty-third day, there came on tension and pains in the abdomen, looseness, loss of appetite, fever, &c. In a short time the cicatrix opened, and little Tallandier died at the end of the third month after the operation.

Nothing worthy of notice was found in the head, thorax, or abdomen. The cotyloid cavity was filled with a tissue of red coloured cellular substance, a kind of soft flabby flesh, which was easily torn and pulled away with the fingers. It still retained its original form and depth. The cartilage which covered it, had experienced no sensible alteration, except that its colour was a little tarnished. The bottom of the cavity was unequal, and presented a hole through which a probe penetrated even into the middle substance of the bone of the ileum, whose internal face was carious in its whole extent.

WE have received peculiar satisfaction from the above case of amputation at the hip joint, from a knowledge of the author and from its being the first successful case of this important operation. The patient died afterward, not apparently from any consequence of the operation, but from his scrophulous disease. The English and American surgeons will inquire the use of a piece of agaric thrust into the middle of the wound? The object, no doubt, was to prevent hæmorrhage. This, however, must be considered as a relick of ancient prejudice and a proof of the obstinacy with the French surgeons continue to oppose the greatest of improvements in surgery, that of union by the first intention. Even the experienced and judicious Baron Larrey retains the same prejudice. As, with this exception, his remarks on amputation are worthy of being known, we shall here introduce them, and subjoin the method of Mr. Hey, in order that a comparison may be formed of the English and French practice of amputation.—*Editor New-England Journal.*

Amputation of a limb, says M. Larrey, should be performed by successive circular incisions. First, The skin, together with the cellular substance and the other subjacent membranes, are to be divided. These are to be held back by an assistant. The retraction is to be favoured by dividing those parts which confine the skin about the circumference of the muscles. It is particularly necessary to avoid the practice of seizing the skin with the fingers or dissecting forceps, pulling it forcibly and detaching it with the scalpel, by a painful dissection. Next by a circular incision, we cut the muscles to the bone, on a level with the retracted integuments. We are obliged to make a third sometimes a fourth incision, and even more, to divide the muscles which adhere to the bone, and prevent the projection of the latter. The operation is completed by sawing the bone and tying the vessels, taking care to cut the ligatures even with the edges of the stump.

In order to keep the edges in contact, nothing more is necessary than a circular band moderately tight, and a piece of fine linen with a slit, to be placed on the extremity of the stump. Over this is applied a pledget of lint supported by strips in the form of a cross ; and the dressing is terminated by the application of a bandage of proper length, which is not to be carried over the extremity of the stump.

Uniting bandages should be avoided. They constrain and fatigue the parts, and oppose that swelling which is necessary to a favourable suppuration. The subsequent dressings should be mild and simple. Such as digestive balsams, to which may be added slightly tonic substances, according to circumstances. The greatest cleanliness must be preserved about the wound in order to favour cutaneous perspiration.

The process I have described, may be employed in all cases, even in these for which the flap operation is practised ; for the latter is, in my opinion, attended with great inconvenience. I have had opportunities of comparing the two methods ; and the constant success which has attended that by circular incisions, has convinced me that it possesses great advantages over that by flaps, although the latter is still praised by some modern surgeons.

Amputation at the articulations is to be performed with flaps. Finally, Whatever method is practised, we must be attentive

to the subsequent treatment; for it is not sufficient to do an operation with dexterity; it is full as important to know how to remedy or prevent the subsequent accidents.

Mr. Hey informs us, that we are to amputate the thigh by a triple incision, and in order to adapt the soft parts to form an exact covering for the stump, the following method may be adopted. First, Measure the circumference of the limb at the part where the bone is to be sawed. Suppose this to be twelve inches, then the diameter of the limb will be four inches. Therefore if no retraction of the integuments, &c. took place, an incision two inches below the place where the bone is to be cut, would afford sufficient covering. The integuments actually do retract, and therefore the first incision should be made three inches below the place where the bone is to be sawed.

After the incision of the integuments, the diameter of the limb is reduced to three inches. Allowing for retraction, the posterior muscles should be divided half an inch, and the anterior three quarters of an inch above the first incision, computing from the mark left on the surface of the muscles in dividing the integuments. The posterior muscles are to be divided with one stroke, the anterior with another. The integuments and divided muscles are to be carefully drawn up by a retractor, and then the deep muscles cut to the bone.

Mr. Hey appears to recommend the application of sutures to retain the parts in contact, because they support the edges of the wound more steadily than adhesive plaister alone. A straight needle is best for making the sutures. Between these are to be applied the strips of adhesive plaister. A long pledget of cerate is placed over the wound, and a flannel bandage, which need not be very tightly applied, if sutures have been made.

The pledget and bandage are to be changed daily after the first two days. The ligatures must be cut away, as soon as they become loose.

CASE OF CÆSAREAN OPERATION,

PERFORMED THREE TIMES ON THE SAME SUBJECT.

[From the New-Medical and Physical Journal for July, 1813.]

MUCH difference of opinion still subsists concerning the necessity and propriety of performing the Cæsarean operation, under certain circumstances of laborious parturition. Some there are, who condemn the having recourse to this expedient, *under any circumstance whatever*;* whilst others, and these the greater number of practitioners, admit that in some very rare cases, the operation ought undoubtedly to be resorted to; all, however, allow that the operation is attended with no little hazard, and not unfrequently proves fatal. It appeared at the time Dr. Hull wrote his book, fourteen years ago, that the Cæsarean operation had been performed in Britain on seventeen women, fifteen of whom had died, eight children having been saved alive.—Whether the proportion remains the same, at the present time, has not been ascertained by a comparison of such cases as have subsequently occurred.† This fatality is probably owing rather to the late period at which the operation is undertaken, than to any error in the subsequent treatment of the patient. This operation is stated by Dr. Klein, of Stutgard, to be more fatal in modern times, although less frequently performed than heretofore; according to him, from the year 1500 till 1769, the operation was performed eighty-two times, of which *six* only proved fatal, seventy-six terminating successfully. But there is every reason to suppose, as Dr. Haighton has well observed, that many of the recorded cases were not incisions into the uterus itself, but were what he calls spurious operations, the fœtus having been contained in some of the appendages. The more frequent performance of this operation on the continent, and the greater apparent success of it, may perhaps be partly attributed to many spurious operations being included in the number, and partly

* Sacombe, in France; Mr. Simmons, in England.

† A successful case of the operation is related by Mr. Barlow, in the "Medical Cases and Records," published in 1791; we know not if this is included in the two mentioned by Dr. Hull.

to the more early period at which the operation is undertaken. Of its entire and complete success, sometimes, however, there can be no doubt; and we do not recollect a more decisive instance than the following case, communicated by M. le Maitre to the Academy of Medicine at Paris, giving an account of his having performed the operation three times on the same subject.*

Leonarde Darthon, wife of one Faure, at Aix, thirty-three years of age, of a weakly constitution and rickety habit, of small stature, (four feet one inch high,) was taken in her first labour, during the day time, on the 22d of March, 1804. The pelvis was very deformed, measuring from pubis to sacrum only one inch four or five lines, and delivery by the natural passages was judged impossible. At midnight, M. le Maitre, assisted by his father, performed the Cæsarean operation, by making an incision below the umbilicus, in the direction of the margin of the rectus muscle. A dead child was extracted from the uterus; the abdominal wound was united by sutures, and properly dressed; and in the space of forty days, it was completely cicatrised.†

Twenty-two months afterwards, in the night of the 24th of January, 1806, this same woman underwent the operation in the Hospital at Limoges, in the presence of M. Fray Fournier, surgeon *en chef*, three pupils attached to the Hospital, M. M. Morel, and Bouteillon, surgeons in the town, and Mad. Begongue, matron of the Hospital. M. le Maitre, this time, made the incision below the umbilicus, in the direction of the *linea alba*, as well to avoid the former cicatrix, as to avail himself of the projection of the uterus at that part. The child was extracted alive, and lived until after it was baptized. The wound was united by sutures, and dressed properly; in eighteen days it was completely healed. The more speedy cure, in this instance, is attributed by the author to his allowing the patient a more nutritious diet.

* Dr. Chisholm relates a case in the Edin. Med. Journal, of the Cæsarean operation being performed successfully twice on the same subject; the second operation, however, he gives only from hearsay evidence, and adds, "I do not vouch for the truth of the second statement, but I believe it myself, from the character of my informant."

† In Mr. Barlow's case, the wound appeared completely healed on the sixth day.

On the 11th of May, 1810, the same woman was delivered by a third Cæsarean operation, of a child, which is still alive. After two bleedings, by leeches, and the administration of some enemata, as preparatory measures, an incision was made below the umbilicus, in the direction of the *linea alba*, about four lines on the right side of the former incision. The same method was pursued after the operation as in the former times, but ineffectually, for the woman, being more than ordinarily alarmed for the event of her pregnancy, died at the end of five days.

Nothing particular occurred at the time of the operation, except a slight hæmorrhage, produced by the displacement of the placenta, at the point where the incision was made; this soon stopped, by the spontaneous contraction of the uterus, after the child was removed, and except a protrusion through the wound of a portion of intestine, which was immediately reduced.

She passed the first night tranquilly, had some sleep; her skin was soft and moist; she voided urine freely; and the lochia appeared; about noon the next day, however, they were suppressed, with pain and hæmorrhage in the lower part of the wound; some clots were detained in the *os uteri*, which were brought away by the finger, introduced to solicit the contraction of the uterus.

Second night, entire suppression of the lochia, recurrence of the hæmorrhage, acute pain extending from the wound to the right hypochondrium; frequent cough; dyspnœa, occasionally cold sweats, small pulse; she discharged a worm *per anum* without any other matters; the abdomen continued soft. The third day in the morning she appeared tranquil; cough less frequent; mucous expectoration; a small quantity of milk in the breasts; an enema was injected without being followed by any evacuation. In the evening the skin was dry, pulse small and frequent, impeded respiration, expectoration difficult. At night copious evacuation of fæces and urine; amelioration of the symptoms; pulse softer, cough less frequent; pain less pungent in the hypogastrium. During the night a sudden aggravation of the symptoms took place; the patient breathed with difficulty; a portion of intestine was forced between the lips of the wound by the efforts of coughing; this was returned, and the wound was supported by a bandage; violent pains in both popo-chondria; emollient fomentations were applied to the abdomen;

three worms were discharged. On the morning of the fourth day, the lochia re-appeared; in the evening cough more violent; hypochondria less painful to the touch, but pain increased on coughing; weak pulse; two more worms were discharged; a tonic anthelmintic was prescribed; the strength seemed a little recruited. At night, much agitation and anxiety; lochia suppressed; dry cough; slight heat on the skin; breasts flaccid. Six worms were discharged on the morning of the fifth day; the symptoms rather mitigated; at four o'clock the pulse became very feeble, the abdomen more swelled and more painful; borborygmi; facies hippocratica; her strength gradually sunk; at six o'clock the extremities were cold, and at eleven o'clock she died.

Dissection.—The uterus was taken out by M. M. le Maitre unknown to the family; the pelvis itself could not be removed; but they accurately took its dimensions. From pubis to sacrum was 19 lines; its transverse diameter 4 inches 7 lines; from the projection of the sacrum to the left acetabulum 17 lines, and to the right acetabulum 23 lines.*

The abdomen was considerably tumefied, and retained the marks of the former cicatrices; the colon and small intestines were inflated and much inflamed, adhering to each other and to the peritonium; the illium and the omentum also adhered together. There was an effusion of bloody serum in the hypogastric region; and at the bottom of the iliac cavities some black blood; a portion of omentum was attached to the wound. The uterus, which had not completely contracted when it was taken away, weighed fifteen ounces and a half; six days maceration in alcohol reduced the weight to fourteen ounces. It retained the marks of the former incisions which had been made into it; the first was in a direction from the neck to the fundus, a little to the right side; but the cicatrix was not apparent in the whole of the line; it was the segment of a cicatrix which, commencing at the lateral part of the neck, soon terminated at a wide opening situated at the anterior part of the uterus, large enough to admit two fingers; the edges of it were callous. The

* The admeasurement of this pelvis nearly corresponds with that of Ann Lee, on whom Dr. Hull performed the Cæsarean operation; the stature of the two women was also nearly alike, Ann Lee being 4 feet 2 inches, English measure.

cicatrix of the second incision commenced at the anterior part of the neck, and soon terminated at the same opening. It appears then, that this opening was formed by the junction of the superior parts of the two first incisions. The third incision had occasioned a fresh wound, $3\frac{1}{2}$ inches long, and 13 lines wide in its middle part, extending from the edge of the broad ligament on the right side, to within two inches of the opposite ligament, forming a semicircular line on the anterior surface of this viscus.

ON THE ACTION OF VOMITING.

[From the New Medical and Physical Journal for July, 1813.]

AN interesting memoir on this subject, has been presented by Dr. Magendie to the Imperial Institute of France, who appointed Commissioners to give an opinion thereon, of whose report we shall present a short account, together with a few extracts. M. Magendie was desirous of ascertaining, if possible, the manner in which vomiting was performed, and for this purpose instituted several experiments in the presence of the Commissioners. All the experiments, say they, which we witnessed were made upon dogs, because they are the animals most subject to vomiting; tartar emetic was almost always employed to produce vomiting, not by way of injection or deglutition, but by introducing it into the jugular vein. And it is worthy of remark, that tartar emetic, when swallowed by the animal, often does not occasion vomiting in half an hour; but when introduced directly into the circulation, it produces vomiting in one or two minutes. We have reason, they add, to be astonished at this constant and irresistible tendency of tartar emetic to produce vomiting, so that wheresoever it is applied, it always produces this effect. During this first experiment, repeated several times upon large dogs, in the abdomen of which, an incision had been made large enough to admit two fingers, it was observed, that at each strain of the animal the fingers were pressed upon from above by the liver, pushed down by the diaphragm, and from below by the intestines, which the abdominal muscles pressed; while the stomach, emptying itself without any sensible motion, did not appear to

diminish in volume. This last singularity is occasioned by the presence of air, which takes the place of the food as it is thrown out of the stomach, and which being introduced through the œsophagus during the long inspirations which precede vomiting, keeps the stomach always sufficiently distended not to escape the compressing action of the surrounding parts. In a second experiment, made upon the same dogs, which had served for the preceding, the incision of the belly being increased, and the stomach drawn out of the body, it was still easier to be convinced of its want of motion. In this state the stomach, filled with air, which had been drawn in some moments before the act of vomiting, was distended like a balloon; but no further vomiting took place, nothing but ineffectual nausea, because the stomach being out of its place could no longer be acted upon by the surrounding organs. By pressing upon the stomach, thus removed out of the body, with the two hands, so as to imitate in some measure the action of the diaphragm and abdominal muscles, vomiting was always produced; but though the dog subjected to this experiment, vomited without having taken any emetic, and exhibited the nausea and other symptoms which characterise vomiting, the column of air did not enter and take the place of the ejected food. This shows that other conditions besides the mere pressure of the stomach are necessary to produce vomiting. Having removed the abdominal muscles from a dog, and injected an emetic, M. M. found that he vomited apparently with as much facility as if the muscles had been in their natural situation; this proves that it is the diaphragm which acts with the greatest efficacy in vomiting, and that the abdominal muscles serve scarcely any other purpose than to confine the viscera, floating in the abdomen, and to oblige them to react in a contrary direction.

The experiments hitherto undertaken, prove sufficiently that the stomach is entirely passive in the act of vomiting, and that the principal effect is produced by the diaphragm. Subsequent experiments demonstrated that vomiting may take place without the stomach. These experiments were repeated three times in presence of the Commissioners, always with the same result. M. Magendie having cautiously (in order to avoid hæmorrhage) made a ligature on each of the orifices of the stomach, removed that viscus altogether, and after having sewed up the wound in

the belly, administered an emetic. In less than two minutes the dog exhibited all the symptoms which precede vomiting; it may even be said that he actually vomited, for he threw out with effort and violent nausea, the mucus of the œsophagus. But the most extraordinary and decisive experiment is the following. In the place of the stomach, which had been cut out of several dogs, M. Magendie substituted a small hog's bladder, almost of equal capacity, to the neck of which a canula of caoutchouc had been adapted, which was thrust into the œsophagus below the diaphragm, and kept in its place by a thread. These dogs were made to swallow water tinged yellow, with which the bladder was filled according as deglutition took place. The opening of the belly having been sewed up, an emetic was introduced into the jugulars. Nausea took place in a short time, and the animals vomited the yellow water, precisely as if it had come from a real and living stomach. The wound in the belly being laid open, the air was observed at each time of straining, descending in a current into the bladder, and distending it as if it had been a real stomach.

From these experiments it is deduced, that the principle, the prime mover of all those movements which produce vomiting, has its source in the seat of the nervous energy itself; that an emetic can only produce its effect by reacting from the stomach upon that place of the seat of the nervous energy, where the principle of the contraction of the diaphragm and abdominal muscles resides; that it is the affection of that part which is the immediate cause of vomiting. These facts appear to be an illustration of M. le Gallois's doctrine, that the seat of the nervous energy (the brain and spinal marrow) is the sole source of all the motions which take place in a living animal, and that no part can move without a particular and anterior modification of that part of the nervous energy by which it is animated. What is the precise part of the brain or spinal marrow on which the efforts of vomiting depend, has not yet been demonstrated by experiment. The following conjecture is thrown out by the Commissioners. M. le Gallois has proved, that the principle of the movement of inspiration is seated in that portion of medulla oblongata, which gives origin to the eighth pair of nerves. If we consider that the efforts of vomiting are executed by the

muscles of respiration, that the nerves of the eighth pair supply the stomach as well as lungs, and that the disorder of the medulla oblongata in apoplexy occasions vomiting, it will be rendered very probable that the efforts of vomiting are situated not far from those of respiration, if they have not the very same position.

CHEVALIER ON GUN-SHOT WOUNDS.

In a former number we have given a translation from a distinguished French writer on this subject. It will be useful to compare the opinions in that publication with those of the author, whom we here introduce. Mr. Chevalier is an English surgeon, of the highest reputation. His book has been received in the most favourable manner, three editions having been published in no long space of time. The following may be considered as an epitome of the most important practical parts of his work.

A GUN-SHOT wound is a wound made by a blunt instrument impelled with great velocity into the living solid.

A wound of this description must therefore necessarily produce more or less of contusion and laceration of the wounded parts; will often be accompanied with hæmorrhage, the fracture of a bone, and in many instances with the lodgment of extraneous substances.

By contusion the texture of some fibres will be weakened, that of others will be broken through, and some portions will be absolutely killed. Those which are dead must be separated; and to effect this will be the first operation of nature. The portion removed is called the eschar or slough. This is not always confined to what is evidently destroyed, but often extends to portions, which have been very much weakened, or whose source of nourishment has been cut off.

A large artery may be so injured by contusion as to slough, and a violent and even fatal hæmorrhage may take place at the formation of the eschar.

If the contusion has been slight, and there is no external wound, the dead particles may be absorbed and the part restored without an eschar.

Every wound is a species of laceration, but when made by a blunt instrument, as for instance, by a ball, the destruction to the parts is more extensive. The less the resistance of any soft part to a blunt substance passing through it, the greater the laceration. The laceration will also be greater, when the substance impelled passes out of a dense medium into a rare one, as for example, out of flesh into air, than where it passes out of a rare medium into a dense one, as out of air into flesh. On this account a shot generally makes a larger aperture at the place of its exit, than at that of its entrance, the latter being often depressed and narrow, while the former is elevated, and comparatively wide.

Where the laceration is greatest, the contusion is the least, *ceteris paribus* and *e contrario*; so that parts, which make little resistance, when lacerated, will often heal by the first intention.

The most probable source of hæmorrhage from gun-shot wounds is a divided artery or vein. If it proceed from an artery, the blood will be of a florid red colour, and will flow from the vessel *per saltum*; if from a vein, it will be of a dark colour, and in a steady stream. The most important hæmorrhages are those, which proceed from wounded arteries, and are the most dangerous, when the artery is not completely divided.

Hæmorrhage from a wounded vessel can be permanently suppressed in three ways only. The first is, causing the edges of the wound in the vessel to unite by the first intention, without destroying the continuity of the canal, as has often been done in small wounds of veins. It will also succeed in an artery if the wound be small and made by a sharp instrument; especially if the artery be small, and favourably situated, so that the impetus of blood may be diverted from the injured point for a sufficient length of time.

The second is, by the formation within the vessel of a coagulum, so firm as to resist the impulse of the blood, and finally to obliterate the calibre of the vessel.

The third is, by bringing the sides of the vessel so nicely in contact, that they may form an intimate union.

For the suppression of hæmorrhage from gun-shot wounds, the last method only can with certainty be depended on.

A bone fractured by gun-shot is generally much shattered, and will be liable to exfoliate. The soft parts suffer great con-

tusion and laceration, and demand more attention of the surgeon than the fracture itself.

The lodgment of extraneous substances in gun-shot wounds forms one of their most painful and troublesome features. They cause great irritation and inflammation, and generally in proportion to their bulk, irregularity of figure or ruggedness of surface. The suppuration of the wound is also much increased; but this is often a mean of removing the extraneous bodies. They sometimes, however, cannot safely be extracted, and frequently in these cases, the part becomes accommodated to the pressure; and cyst is formed to enclose the body, and irritation ceases. Thus nature, when unable to get rid of her foe, immures it, as it were, in a solitary cell, and takes away from it the power of hurting her.

The causes of several peculiarities attending gun-shot wounds are to be sought among the laws, by which moving bodies are governed, and by which the mechanical effect of a ball propelled against any part of the body must therefore be necessarily determined. The form, the momentum and direction of the shot, that is received; the position and the variety of structure, or in other words, the variety of density and powers of resistance in the part receiving it, must always be considered in order to account satisfactorily for the effects it produces.

The resistance afforded by any substance to the motion of another will be more or less, *ceteris paribus*, as the angle of incidence approaches to or recedes from a right angle; and if it be reflected and the motion be continued in the same medium, the angle of reflection will always be equal to the angle of incidence.

Every new resistance, which a shot in motion meets with, will operate so as to produce not only a diminution of its momentum, but also a change in its direction; every fresh resistance being in fact equivalent to a fresh power, acting in a different line to that, in which the shot was previously moving.

As a body acted on at once by two powers will not move in the direction of either, but in a diagonal of a parallelogram, of which two sides are formed by the direction and momentum given by each of those powers respectively, so every change of impulse or resistance will cause the body to move in so many changes of direction, till at length its momentum is overcome, and it becomes quiescent.

On the treatment of Gun-Shot wounds.

The treatment of gun-shot wounds may be comprehended under three distinct heads. That, which the state of the wound demands immediately, on its being inflicted. That, which is necessary during the inflammatory stage; and that, which may be required after the inflammation has subsided, and suppuration commenced.

The first object of the surgeon will be to ascertain, where the ball made its entrance, what course it had taken, and if it had not lodged, the place of its exit.

The orifice formed by its entrance may generally be distinguished from that made by its exit, by the former being smaller and more depressed than the latter. The relative situation of these two apertures, with a knowledge of the parts which intervene, and their influence on the motion of the ball, will enable the surgeon to judge pretty correctly of the path, which it had made in passing from one point to the other. The introduction of an instrument into the wound should, if possible, be avoided. But it may be necessary, in order, where a bone is badly fractured, or an important blood vessel injured, to ascertain the situation and extent of that injury. Also when the ball or any other extraneous substance has been lodged in the wounded part, it will often be advisable to search for it at once, that it may be extracted before inflammation begins. But if inflammation has commenced, or the examination cause much pain, it will be better to defer it till suppuration has taken place, when it can be done with more ease. Circumstances, however, may occur, which will demand an immediate attempt to gain certain information of the course and extent of the wound; as for instance, it may be necessary to determine at what point a blood vessel is divided; or whether a viscus or other important part, which seemed to be in the way of the ball, be wounded, in order to determine the position of the patient, and the subsequent treatment.

An examination being necessary, the position of the wounded part must be studied, that it may not be either too much stretched or too much relaxed, lest the instrument should, from either cause, get entangled in the passage. The finger is the preferable instrument to any other, when it can be employed. Next to this, the *largest* instrument that can be used, should be chosen.

The hæmorrhage will naturally command the immediate attention of the surgeon; and when it is considerable, he will as soon as possible apply to a tourniquet, or if this cannot be used, make a pressure in some other way upon the artery, from which the blood is supplied to the wound. As soon as circumstances will permit, the wounded arteries must be secured by ligatures; and if they are inaccessible, in consequence of the narrowness of the wound, this must be enlarged by the knife; and this should be done boldly and freely, so as to bring the bleeding vessels fairly into view, and enable the surgeon to secure them with ease and effect. The ligature should be applied as closely as possible, to that part of the artery which is fairly imbedded in the flesh; and a sufficient portion of the vessel should be left without the ligature to secure it firmly against the impulse of the blood. It is, sometimes, necessary to apply a ligature below, as well as above the wound of the artery. After the ligatures are secured, if the artery has not been previously divided, it should be done by the knife, that the ends may retract into the surrounding substance. The ligature should neither be so small as to risk cutting the vessel, nor so large as to tie a clumsy knot.

When the vessel is so situated, that the ligature cannot well be applied, we may have recourse to pressure to the sides of the vessel by graduated compresses; a small thick compress of a proper length, and about three or four times as large in its diameter, as the vessel, being first applied and secured in its precise situation with another still larger over it, and another still larger over that, and so on, all fixed by adhesive plaster or bandage, or both. The compresses should be applied to an uninjured surface, if it can be done so as at the same time to command the bleeding. In deep and narrow wounds, as for instance, in a wound of either of the arteries of the leg made by a shot passing between the heads of the tibia and fibula, the graduated compression may be employed in the following way. A small bit of sponge being passed down to the bleeding vessel with care and precision may be followed by another, and this by another, and so on, till an adequate degree of compression is produced, and can be maintained by a bandage over all.

When neither ligature nor compression can be used, the principal means left us is rest, and the application of cold, not only to the wounded part, but to the whole body, so as to reduce the

impulse of the arteries below their natural standard, and at the same time induce contraction of the wounded vessel. In wounds of the large viscera, absolute rest is indispensable ; and when the patient is convalescent, an adherence to a spare diet, living in a cool atmosphere, and constant quiet are necessary to ensure a successful issue.

Completely dividing an artery, which is only partially cut, especially if it be small and run in a furrow or canal of a bone, will sometimes excite contraction and stop the bleeding. The bleeding from arteries running into bone, may often be most effectually stopped by a judicious application of the actual cautery.

The extraneous substances, that may be lodged in wounds by gun-shot are of considerable variety ; of these, generally speaking, leaden bullets are the least injurious. All extraneous bodies, however, should be extracted as soon as possible, without sacrificing more important considerations ; and when they readily present, their extraction should be immediately accomplished. When the wound is not sufficiently large to admit their extraction with facility, it is preferable to enlarge it at once with the knife, than to stretch and tare it with blunt instruments ; but if the intervention of important parts forbid the use of the knife, we may wait for suppuration, when the wound may be so dilated by a spongy tent as to admit an instrument to seize and extract the extraneous body.

The following rules, Mr. Chevalier thinks will assist the judgment of the surgeon.

First, It should be clear where the extraneous bodies are lodged.

Second, It should be probable, that there will be no greater risk in the extraction, and all that is necessary to it, than will arise from the continuance of the substance itself.

Third, If a state of high inflammation be present, unless it be probable, that it depends as much or more on the extraneous substance, than on the wounded state of the parts, the extraction had better be postponed, till suppuration comes on. But where tetanus or convulsions supervene, an extraneous substance should be extracted at all events, if it be any way accessible without imminent danger.

When a shot strikes against a bone, this may suffer in conjunction with the soft parts, or the principal injury may be done to the latter. The shot striking the bone obliquely, may strip from it the soft parts for a considerable distance, without making a breach in its substance. The treatment necessary in this case, is to enlarge the wound from its orifice down to the bone, if the ball entered below and passed upwards; but if it entered above and passed downwards, and can there be distinguished, an opening of the same kind should be made at that point for the purpose, not only of extracting the ball, but of establishing a depending drain for the discharge of matter and any foreign substance.

When a ball lodges in the substance of the bone without fracturing it, the extraction cannot, in general, be performed with ease till suppuration commences. If the ball goes quite through the bone without producing fracture, it will be necessary early to enlarge the wound and remove any splinters, that may be loose. If the bone be completely fractured, it must be treated in every respect like a compound fracture. In all salvable cases, large splinters sticking into the flesh should, if possible, be immediately removed, and every step taken to prevent irritation and inflammation. In such cases, the prognosis will depend as much or more on the state of the soft parts, than on that of the bone which will often recover from very great injuries, if the soft parts are not extensively destroyed.

Wounds of the joints should be treated according to the same rules as other parts. The principal danger in these cases arises from the subsequent symptoms being exasperated by the unyielding nature of the cartilages and ligaments. "If a joint be already opened by the shot, enlarging the opening by the knife, and thus giving room for a perfect examination, and a ready exit to whatever should come away, will be perfectly justifiable." The correctness of this observation is corroborated by a case which I think worth presenting entire. It was communicated to the author by Mr. Stewart, surgeon of Bourn in Lincolnshire, England, and follows.

T. W. of Pointon, in the county of Lincoln, received a punctured wound in the knee joint from the point of a reaping hook. The surgeon, who had the care of him, employed repeated bleeding, purging medicines, hot fomentations, poultices,

and every plan of reduction. He passed ten days under this plan, before I saw him, at which time his pain was extremely increased, the whole limb distended with lymph, the knee exquisitely painful, when touched, and wonderfully enlarged; a small wound surrounded with pale pouting edges of granulations; pulse low, great prostration of strength, frequent vomiting; his countenance extremely dejected, expressive of exhaustion, a very large discharge of synovia, which, upon pressure, flew from the small orifice in a stream. The man was sinking fast, and there was no other alternative, than amputation or a free dilatation of the fascial coverings of the joint and capsular ligament supported upon the principle directed in your treatise in case of gun-shot wounds, where the ball is fixed in the bone of the joint. I, therefore, freely dilatated the fascial aponeurosis covering the capsular ligament, and then the capsule itself passing the knife in at the puncture. The wound was covered with lint, and a tepid solution of opium ordered to be constantly applied to the knee and limb. The bark, opium, wine, and nourishing diet were ordered. The synovial discharge gradually abated, and in about eight weeks, the patient was perfectly recovered with a tolerable use of the limb.

It was once made a question, whether amputation ought under any circumstances to be performed, and with some reason, while the old method of operating continued? But the present improved method places the question in a different point of view. Still amputation does not cease to be a very serious evil, and were the nature of the wound, or the circumstances under which it is committed are such as to leave the necessity for it doubtful, it had, in most instances, better be delayed. Cases, however, often occur, in which there remains no other alternative than amputation or death. But besides these, there can be no doubt of the propriety of performing the operation to remove the shattered end of an extremity, the lower part of which has been entirely shot away. Nor will the necessity for it be less imperious and decisive, where the limb is so injured, that the part below the wound is deprived of life, or every thing necessary to the utility of the limb destroyed, as for instance, when the principal artery, as the brachial or femoral, and the principal nerves of a limb are shot through, and the limb otherways very much injured. The destruction of the principal artery would

not alone be a sufficient reason for amputation ; much less would a wound in either of its divisions justify the operation. If the vessels and nerves have escaped, and the soft parts are not much wounded, the limb may be saved though the bone should be greatly shattered. The discretion of the surgeon will, however, be influenced by the situation of the patient. But if a vascular part, or an artery of difficult access has been wounded, the patient already so much exhausted by bleeding, as to render improbable his ability to support the steps necessary to stop the hæmorrhage, amputation should be performed as the lesser evil.

Most gun-shot wounds will require dilatation by the knife at some time in their progress, and it has been maintained by some that this ought always to be done at first. Mr. Chevalier observes, it seems absurd to make the rule to dilate so absolute, that a man must inevitably be cut, because he has had the misfortune to be shot.

This operation, however, will often be necessary in the first instance to expose or secure a bleeding vessel ; to extract extraneous bodies and splinters of bone ; to give vent to air or blood oppressing the lungs, the brain or other important parts, and in some instances to effect the reduction of a difficult compound fracture.

The dilatation of those wounds, which have penetrated an aponeurosis or fascia will generally be best performed after inflammation has come on, or suppuration actually commenced ; because under these circumstances, the extent and direction of it will be better designated ; but where the entrance of the ball will be a depending part, the orifice may be advantageously enlarged immediately. When the path of a shot lies only along the cellular membrane, or when the wound is already sufficiently patent for the discharge of whatever must come away, an immediate dilatation may certainly be dispensed with. But whether those wounds, which are not likely to heal by the first intention be dilated or not, the dressings must be so managed as not to interfere with the process of suppuration, which is to follow ; and the orifice of the wound must be kept open in order to give a free exit to matter from its bottom.

In wounded parts, if they be healthy, a sufficient degree of inflammation uniformly takes place to repair the injury committed. The object of the surgeon will be to prevent this in-

inflammation exceeding the necessary degree. This end will be accomplished best by blood-letting, if the action of the heart and arteries is too great; by preventing costiveness, by spare diet, rest and quiet, cool and wholesome atmosphere, and cooling applications to the wounded parts. In wounds of the lungs and in wounds of the cavities in general, nothing gives so much relief as repeated small bleedings; the quantity of blood should be kept as small as is consistent with the functions of life, till the injury is, in a good measure, repaired.

When inflammation has actually taken place, the above mentioned remedies will be equally applicable. Bleeding, in this state, is undoubtedly the most effectual remedy; but in those cases, in which extensive sloughing or profuse suppuration is anticipated, it must be used with great circumspection, and as much assistance as possible derived from other remedies. In gun-shot wounds great violence is done to the organization of the part, the system has a long and arduous task again to make it sound, and requires a careful management of all her resources.

While guarding against the effects of too great inflammation, the surgeon will not forget, that in some cases the powers of the symptom will be suddenly prostrated, and his utmost effort be required to save his sinking patient. The pulse becomes small, frequent or irregular; the countenance marked with great anxiety, the tongue dry and brown; the bowels lax, and the stomach rejecting food and medicine; the inflamed part vesicating or becoming livid, whether attended with characters of inflammation, or gangrene. Under such circumstances the bark, wine, aromatics, opium and camphor must be given with a liberal hand. A pill with three or four grains of camphor and one of opium, given at proper intervals, will have the happiest effect. The injured part should be covered with spirituous embrocations, or poultices made with yeast or antiseptic vegetables, such as bark, chamomile flowers in powder, &c.

When a healthy suppuration is established, the dressing to the wound should be light and easy; and the granulations if sound, should be disturbed as little as possible. Free openings should be made for the discharge of pus; especially, when confined under the cranium or within the thorax, openings for its evacuation should be made as soon as its presence is discovered. The strength of the patient must be supported by nourishing

diet, and bark and wine; &c. When, however, the discharge of pus is very great, the best care will fail to save him. This will frequently be the case, where the bones or joints have been much shattered and even where a large portion of flesh has been lost. Hence, when the part doing the mischief is so situated, that it can be removed, amputation should be the resort.

EXPERIMENTS ON THE ACTION OF REAGENTS,

APPLIED TO THE MUCOUS MEMBRANE OF THE TRACHEA IN LIVING ANIMALS.

BY M. HEBREAD, SURGEON OF THE HOSPITAL OF BICÊTRE, PARIS.

[Translated from the *Journal de Medicine*, by W. Channing, M. D.]

DESIROUS of contributing my part to the labour which this society has undertaken relative to artificial croup, I will just submit to it the result of experiments which I have made on living animals. I should however say a few words on the action of reagents on the tracheal mucus after death.

SECTION I.

If the mucus which lines the trachea, and the larynx of persons dead from disease, or of animals killed in shambles be collected, and exposed to the action of reagents, it will be found that it does not differ from albumen. In fact, heat, acids, alcohol, coagulate it, and this coagulation presents different results according to the nature and the strength of the reagent. Heat at 60° gives it a pulpy consistence; at 80° a membranous one, at 90° it becomes firm, brittle, and of a dull colour; alcohol and ether give it a pulpy consistence, and the colour of white pearl. Each acid communicates to it a colour and consistence peculiar to itself. The acid gases directed on the tracheal mucus produce equally its coagulation—The gum, resins, sugar. Resins have no effect on the tracheal mucus. Once being coagulated, whether by heat, or by these reagents, the tracheal mucus presents the same phenomena as albumen does, coagulated by the same means. Thus the coagulum of tracheal mucus by heat, and the acid is soluble in the fixed alkalies, mingling with water, but never in ammonia. This last reagent dissolves only the

coagulum of mucus which has been produced by alcohol and ether, and this only after macerating it for many days.

Coagulated by tannin, it is not soluble neither in ammonia nor in the fixed alkalies.

The carbonate of ammonia and lime water have no action on coagulated tracheal mucus, let the agent be what it may which has effected the coagulation.

SECTION II.

Action of heat and reagents on tracheal mucus in living animals.

The experiments of Fordyce, of Tillet, and of M. de la Roche, prove, in an incontestible manner, that living animals have the property of supporting a heat very superior to that of boiling water, and that air heated above 90° may be received into the trachea, and the bronchia without producing the coagulation of the mucus which lubricates them. We see persons drink fluids heated to 80° without being incommoded: it is without doubt, the vital power, the *vis vitæ* which moderates the chemical action of heat on the solids and fluids of animals.

It is likewise this vital power which prevents weak acids, alcohol, the decoction of tannin, &c. taken into the stomach, from coagulating the mucus which lubricates this organ, as well as the œsophagus. Nevertheless this power has a limit, which is relative to the degree of the strength of the reagent, and to the situation of the individual which experiences its action. The experiments which I am about to relate, I think, furnish some data on this subject.

I obliged a hare to inspire for some time ether, by fixing into his mouth the neck of a flask filled with this liquor, and prevented his respiring by the nostrils.

I obliged him to inspire after the same manner, ammonia; in neither case did I observe any coagulation of the tracheal mucus.

It should be noted that I took care from time to time, to suspend this inspiration, that the animal should not be suffocated. The inspiration of nitrous gas produced nothing more than a redness, that of sulphureous gas and the phosphoreous, produced spots more red, but no coagulation of the fluid mucus.* That

* It would not do to conclude, because the inspiration of this gas has not given place to the formation of a false membrane among animals, that it would not produce it in infants whose organs are endowed with greater sensibility.

of nitro-muriatic gas has produced the coagulation of tracheal mucus in young rabbits; it should be repeated many days in succession, and at many times, to produce the same effect on animals a little older.

Inspiration of the oxygenated muriatic gas coagulated in a very short time the tracheal mucus of rabbits, dogs, and cats, without regard to age, care being taken to expose the animal many times to the action of these vapours; if they be made to respire these more than two or three seconds successively, asphyxia will occur without any coagulation being produced. The same thing occurred with the nitro-muriatic gas, but however with less rapidity. One circumstance well worth mentioning is that the mucus secreted by the mucous membrane which lines the interior of the mouth, has not been coagulated by inspiring acid gases, which nevertheless, might have acted on it, before it acted on the tracheal mucus; must we suppose a difference of organization between these two membranes? or can we better attribute the absence of these albuminous concretions to the motions of the tongue and the membranes of the mouth during mastication and deglutition?

The result of the experiments which we have just related is, that the coagulation of the tracheal mucus does not take place, from inspiring ether, ammonia, nitrous sulphureous or phosphorous gas, and that it takes place on inspiring nitro-muriatic gas, and oxygenated muriatic gas. We are about to see that the immediate application of certain fluid reagents on the tracheal mucus produce much more promptly the coagulation of its mucus.

After having opened the windpipe of a rabbit, I poured half a spoonful of distilled coffee water into this canal; the animal experienced immediately a slight rattling which continued about half an hour, and oftentimes recovered his natural state, expiration having by degrees forced the water out of the windpipe.

I repeated many times this experiment, with ordinary water, saturated with the muriate of soda; the animal discovered in this last case a little more fatigue, but he afterwards recovered his natural state, and I never found after killing it, any redness nor false membrane in the windpipe.

Water thrown into the canal not having produced any accident, served me as a mark of comparison to appreciate other substances which I successively introduced into the trachea.

Common vinegar produced great agitation the instant it came into contact with the mucous membranes; an hour after the respiration became whining, the next day rattling; the head being thrown backward, the third day, the same state, the animal could not eat, and appeared to support itself on its legs with difficulty, and died in the evening.

This experiment has been frequently repeated, and on opening the dead bodies, I have constantly found the mucous membrane covered with a greyish membranous texture, of a middling consistence slightly adhering, so that it might be raised entire without tearing it. The extent of this false membrane varied in every individual submitted to experiment, from the larynx to the divisions of the bronchia; the same phenomena took place from using instead of vinegar, the diluted mineral acids.

I introduced after the same manner, into the windpipe, a spoonful of a decoction of gallnuts, the animal exhibited immediately a great prostration, and died at the end of three hours. I found the tannin precipitated in the trachea, and no false membrane.

I repeated the experiment with a weaker decoction of tannin, and it produced a false membrane.

The injection of alcohol into the trachea produced a very delicate false membrane, after it had been repeated for six days, and twice daily.

The injection of ether, immediately suffocated the animal, without producing the false membrane; but on introducing the ether, several times, and in a very small quantity, I produced the false membrane, and the animal died on the third day, as if intoxicated.

The action of ammonia is still more prompt; injected into the trachea of a rabbit, it produced at once great agitation; the next day the animal did not appear to respire with difficulty, the neck was stretched out, the head thrown back, and the third day it died. I found on opening the body a very dense false membrane, occupying the larynx and the trachea; this experiment has been repeated many times, and always with the same

results. Caustic potash dissolved in distilled water has given rise to the same phenomena.

These experiments demonstrate, that the tracheal mucus may be coagulated during life by the immediate action of the acid of tannin, by alcohol, by ammonia, and the fixed alkalies dissolved in distilled water.

In what manner do these various reagents act in the production of a false membrane?

At first we may be assured, that it is not chemically, for alkalies produce it as well as acids. Nor is it more by an operation purely mechanical, for we never observe a false membrane in the trachea of persons who have died by suffocation, by the introduction of foreign bodies into the trachea. I know not of a single case of a false membrane produced by this cause.

I have once performed the operation of tracheotomy on an infant; I have once seen it done. In these two cases, I observed a large accumulation of mucus in the windpipe, but no vestige of a false membrane. Foreign bodies, as small pieces of glass, little rough stones, the heads of blades of wheat, artificially introduced into the windpipe of various animals, have discovered to me the inflammation by which they are surrounded, but I have never been able to produce in this manner the false membrane.

We may, I think, conclude from these facts, that the phenomena which attend the inflammation of the tracheal mucous membrane vary with the causes which produce that inflammation; and that we have not any new data sufficiently certain, to determine the kinds of inflammation, which give origin to the developement of false membranes.

REVIEW.

ARTICLE XIX.

Histoire des arbres forestiers de l'Amérique septentrionale considérés principalement sous les rapports de leur usage dans les arts, et de leur introduction dans le commerce.—Par Fs. André Michaux A. P. S. &c. &c. Tome III.

History of the forest trees of North-America, considered chiefly with regard to their use in the arts, and their introduction into commerce. By Fs. André Michaux, Vol. III.

It is a year since we presented our readers an account of the two first volumes of this very splendid and interesting work. Since that period, the third and last volume has been completed, and has just reached us. We lament that the circumscribed limits of one publication do not permit us to do more ample homage to the merits of this scientific foreigner, for a production interesting and important to the nations of Europe; to this country of inestimable value. The resources of any nation are so extensively and permanently increased by a correct knowledge of the productions of their own soil, that we believe no American can look with indifference on a work conveying the most minute and accurate information, relative to a valuable and substantial part of our natural riches. The American forest is distinguished, not only for the size and maturity of its products, which, in many places, have not yet been interrupted by cultivation; but the qualities and various uses of its trees are such, as to have rendered them a desirable object for introduction into the cultivated forests of Europe. M. Michaux, in traversing the whole extent of the United States, has devoted a very accurate attention to the geography of our native trees, to the places of growth, the appearance and disappearance of the several species. He has minutely noticed the various uses to which they are or may be appropriated, the characters, peculiarities and advantages of each, their value and prices, and the comparative frequency or rareness of their occurrence. Of the former part of the work, containing the extensive and valuable families of the pines, firs, oaks, walnuts, maples, &c. we have already given an account.

The third and largest volume contains the following trees :— Cypress, white Cedar, Arbor Vitæ, Larch, red Cedar, Devil wood, (*Olea Americana*,) Iron Wood. (*Carpinus Ostrya*,) Hornbeam, Sweet leaf, (*Hopsea tinctoria*,) Crab apple, June berry, large and small Magnolias, Cucumber trees, Umbrella trees, white, red, green, black, blue, and Carolinian Ash, loblolly Bay, (*Gordonia lasianthus*,) Dogwood, Dwarf rose bay, (*Rhododendron*,) Mountain Laurel, (*Kalmia*,) wild Cherry, wild Orange, red Cherry, Papaw, sweet and water Locust, (*Gleditsia*,) Sassafras, red Bay, Button wood, Sweet gum, Tulip tree, Catalpa, Sorrel tree, Nettle tree and Hackberry, (*Celtis*,) Buck eye, Ohio buck eye, white and red flowering Locust, (*Robinia*,) Yellow wood, (*Virgilia lutea*,) white and red Elm, Wahoo, (*Ulmus alata*,) Aspens, Cotton tree, Cotton Wood ; black, Virginia, Carolina, and balsam Poplar, Bass wood, white and downy Lime trees ; common and black Alder ; black, champlain, and shining Willow.

These trees are severally treated of with minuteness, and their botanical characters laid down with suitable precision. Each species is illustrated by a beautiful coloured engraving, presenting the form of the leaves, flowers, and fruit. At the end of the work, is given a *Resumé*, designating the principal trees used in the mechanic arts or for domestic purposes, in the different parts of the United States. With this interesting summary we shall employ ourselves, by presenting a condensed view of the principal subjects under their respective heads.

SHIP BUILDING.

The materials used for Ship Building in different parts of the continent, according to M. Michaux, are as follows.

For the keel.—In Nova-Scotia and the District of Maine, the sugar Maple and white Elm, which in those countries arrive at their greatest size, are principally used. In Boston, keels are made of White oak. In New-York, of the same. The Shag-bark hickory was formerly used, but trees of a suitable size are not now to be found. In Philadelphia, of White oak ; a few of Hickory. In Baltimore, of White oak principally. In Charles-ton and Savannah, always of the southern Pitch pine, (*Pinus australis s. palustris*,) On the Ohio, of White oak.

For the lower timbers, (Charpente inférieure.) In the District of Maine where the white oak is scarce, it is reserved for the upper timbers, or those between wind and water, while for the lower, are used the poorer kinds of oak, the Yellow birch, Red beech, Sugar maple, and White ash. In Boston, White oak is chiefly used; sometimes Red oak. In New-York, Rock chestnut and White oak. In Philadelphia, White oak with some Hickory, Locust, and Mulberry. In Charleston and Savannah, Live oak and Pitch pine. On the Ohio, White oak, Locust, Mulberry, Wild cherry, Red elm, and Black walnut deprived of its sapwood. In New-Orleans, Live oak and Red cedar intermixed.

For the upper timbers, (Charpente supérieure.) In Maine, white, grey, and red Oak. In Boston, White oak; some imported live oak from the south, and red and grey oak. Swamp white oak was formerly used, but now more scarce. In New-York, Live oak and Red Cedar placed alternately. These are imported from Georgia and Florida. In Philadelphia, the same. The lightness of the cedar compensates for the great weight of the Live oak. Some use is made of the Red bay, (*Laurus Carolinensis*,) imported from the southward, and also of Locust, Mulberry and Hickory, or Black walnut which, when deprived of its sap, is nearly as durable as the Live oak. In Baltimore the same, with more Locust. In Charleston, Savannah, and New-Orleans, Live oak and Cedar. On the Ohio, White oak and Black walnut.

Knees, (Genoux.) In Maine, of white, red, and grey Oaks, Larch, and Black spruce. In Boston, White oak and Black spruce. In New-York and Philadelphia, White oak when suitable pieces can be procured, otherwise Rocky oak. In Charleston and Savannah, Live oak, which is the best material. On the Ohio, Locust, Mulberry, Hickory, and White oak.

Side Planks, (Bordages.) At Boston, of White oak, the Pitch pine from the southern states is preferred for wales. In New-York, Philadelphia, and on the Ohio, of White oak. At Charleston, of the southern Pitch pine. In New-Orleans, of Cypress.

Deck.—In Maine, of White and Red pine. In Boston, of White and Red pine. The latter, (*Pinus rubra*,) called here Yellow pine, and brought from New-Hampshire by the Middlesex canal, is preferable. In New-York, of Yellow pine, (*Pinus mitis*,) from New-Jersey and the eastern shore of Maryland.

In Philadelphia, of the same, and the southern Pitch pine. In Charleston and Savannah, of the last. On the Ohio, of Yellow pine. In New-Orleans, of Cypress.

Tree Nails, (Gournables.) In Maine, of White oak. In Boston, of the same and Locust. In New-York, Philadelphia, and on the Ohio, always of Locust, which is the best material. In Charleston of the heart of pine, if the planks are of that wood; or of Live oak, Locust, or Mulberry, if the planks are of oak.

Masts and Yards. In the eastern states, the lower masts are of White pine, the topmasts and yards of Black spruce. In New-York the masts of White pine, the topmasts of Yellow pine, the yards of Black spruce. In Philadelphia of the same; the Black spruce imported from the District of Maine.* In Baltimore the masts are of the Yellow and southern Pitch pine. In Charleston the masts of Pitch pine, the yards of Black spruce from the District of Maine. On the Ohio, White pine and Black spruce. In New-Orleans, of Cypress, which, when properly seasoned, is said to be superior to the pines.

Pumps in the northern states are of the northern Pitch pine, (*Pinus rigida s. resinosa*;) in the southern states of Loblolly pine, (*Pinus taeda*.)

Blocks, (Boites à poulies.) Always of Ash. The Red elm is recommended as a suitable material.

Oars.—Of White ash; the best possible wood on account of its lightness, strength, and elasticity.

Cleats and capstan bars, of Ash and of Hickory.

Figure heads always of White pine.

HOUSES.

With the exception of a few of the principal cities, the buildings in the United States are almost exclusively of wood. M. Michaux, in traversing the whole extent of the country, had an ample opportunity of observing the materials which, in the different states, are appropriated to building, as the most durable, the most plenty, or most easy to work. He has, accordingly, given a view of the several kinds of wood, which enter into the construction of houses in different parts of the country.

* We learn that a great portion of the Spruce trees in the District of Maine were killed about three years since, by the ravages of an insect.
ED.

In the eastern states, the White pine is the tree most extensively used in building. But the great consumption and exportation of this wood, has rendered it less frequent than formerly, and made necessary the substitution of other kinds. The frames, however, are chiefly of this wood, with some of the smaller timbers of Spruce. The boards are of hemlock, covered with clapboards of White pine. The floors are of White pine or of Black spruce. The shingles of the roof, (*essentes*,) are of White pine, as is the joiner's work of the interior. We would add, that in this vicinity considerable use is made of the common Pitch pine, (*Pinus rigida*,) for timbers and floors, while the White pine constitutes the common boards for covering.

In New-York and New-Jersey, the frames and coverings are uniformly of White pine. Floors of the same wood and of Yellow pine which is harder. The roofs are covered with shingles of White cedar, (*Cupressus thyoides*.)

In Philadelphia the principal material is White pine, with some Yellow pine. In brick houses, both here and in New-York, the white and other species of oak are used for sills and joists. Some use is made of the Sweet Gum tree, (*Liquidambar Styraciflua*,) in the upper stories. Rafters of the white and black Oak, and the Tulip trees. Floors of Yellow pine. Shingles of White cedar, or of Cypress from the southern states. Inside work of White and Yellow pine. In the interior of Pennsylvania, west of the Alleghany mountains, the frames are of White oak, the floors of the same wood, shingles of Black oak, which is less liable to warp than the last. The boards for covering, the window frames and sashes, and the joinery inside are mostly of the Tulip tree or poplar. At Pittsburg and Wheeling on the Ohio, some houses are built entirely of oak, owing to the scarcity of Tulip wood, and the still greater scarcity of pine. The wood of the Tulip tree, (*Liriodendron tulipifera*,) is considered inferior to pine, but preferable to oak.

In Maryland and the eastern parts of Virginia, the houses are chiefly of White and Yellow pine. At Petersburg they are of Loblolly pine, with shingles of Cypress.

In the lower parts of Carolina and Georgia, the frames are of the southern Pitch pine, the boards of White pine brought from the northern states. The Cypress was formerly almost the sole material employed in building, and is still

used for the Joiner's work and shingles, although this valuable tree has become scarce near the sea coast. In upper Carolina the buildings are chiefly of Yellow pine, covered with shingles of Tulip wood.

At Lexington and the neighbouring places in Kentucky, the timbers are of Blue ash, (*Fraxinus quadrangulata*,) or of White oak. The lower flooring is of the same materials; the upper flooring of Tulip wood. The Joiner's work of Tulip wood, Wild Cherry tree, and Black walnut. The roofs are covered with boards of the Hack Berry tree, (*Celtis crassifolia*,) and shingles of Tulip wood. These shingles do not crack, and are said to last forty years.

In Lower Louisiana, the houses are said to be made chiefly of Cypress, a very excellent and durable wood, superior to any species of pine.

CABINET WORK.

Among the more affluent class of society it is well known, that the Mahogany has superseded all other wood as the common material for furniture. It is, no doubt, superior to any native wood, not only for its fine colour and susceptibility of polish, but likewise for its firmness and freedom from liability to warp. But, in the mean time, a variety of kinds of wood, the spontaneous growth of the country, have been introduced into cabinet work, not only in combination with Mahogany, but also alone, as constituting the material of the cheaper kinds of furniture. Some of these are valuable for their colours, others for the fineness and curious distribution of their grain. In the eastern states much use is made of Maple, particularly the Curled and Bird's Eye Maple; which are varieties of the Red and Sugar Maple. The Wild Cherry tree and some species of Birch, are capable of receiving a handsome colour. In the middle states the Cherry tree, Black Walnut, Maple, Button Wood, and Sweet Gum are used; the three latter chiefly for bedsteads. At the southward, considerable use is made of the Red Bay, (*Laurus Caroliniensis*,) which has a red colour and a fine silken grain.

CASKS.

The business of cooperage in the United States employs a vast number of hands, on account of the great use made of barrels and other casks, not only to receive liquids, but also flour and grain, which in Europe are contained in sacks. A great number of staves and hoops are also exported to the West-Indies and to Europe. The common material for staves is Oak of various kinds. Of these the White Oak is probably the best. M. Michaux recommends the Red Oak, which is very porous, as most suitable for casks destined to contain liquors which are liable to ferment. Hoop poles are of Walnut and White Oak. These are not exported to Europe, on account of the preference given there to Chesnut cultivated for the purpose. In Nova Scotia and Maine, where Oak is scarce, barrels destined to contain fish are often made of Spruce and White Pine, with hoops of Yellow Birch, Beech and Black Ash.

WINDSOR CHAIRS.

The manufacture of these constitutes in the United States a distinct trade. Besides domestic use, they are exported from the northern to the southern States, and to the West-Indies. The backs of these chairs are made of Ash, Hickory and White Oak; the legs of Maple; the bottoms of Bass wood, (*Tilia Americana*), Tulip wood and Pine; frequently of flags (*Typha*) from the fresh water, not from the salt marshes, as M. Michaux states.

CARRIAGES, &c. &c.

The pannels or outside boards in the bodies of coaches and chaises at Boston are chiefly of Tulip wood brought from the middle States. Farther east they are of Bass wood. At Philadelphia where the art of carriage building is carried to great perfection, they are of Tulip wood. The frame and carriage part is commonly of Ash. The Persimmon (*Diospyros Virginiana*) is said to be a better material for shafts, on account of its superior strength and elasticity. The wheels have their navies or hubbs (*moyeux*) in the northern States of White Elm, in the middle States of the Black Gum tree (*Nyssa Sylvatica*;) at

Charleston, S. C. of the Wahoo tree (*Ulmus Alata.*) The spokes are of White Oak ; the felloes generally of Ash.

Waggon and carts have their frames of White Oak, or of Black Gum tree, their axletrees of Hickory. The Pignut Hickory (*Juglans Porcina*) is the best. White Oak is also used. In Maine where these trees are scarce, the axles are made of Sugar Maple, as are frequently also the wheels. In the middle and southern States they use for wheels several kinds of Oak, such as the White, Spanish, and Willow Oak. The hubbs are of Elm, Black Gum, and in the maritime parts of the southern States, of Live Oak, which is preferable to any other material for heavy wheels.

Ploughs are of White Oak. Ox yokes in Maine of Yellow Birch, elsewhere of Maple, with Walnut bows. Sleds are of White Oak shod with Walnut or with Dogwood, (*Cornus Florida*). Water mills are of White Oak, the cogs of the wheels of Walnut, in Maine of Sugar Maple. In the southern States the rice mills are of Pitch Pine. (*Pinus Australis*), the cogs of Live Oak, the trundle heads of Black Gum. Trunks at Boston are of White Pine, in New-York and Philadelphia of Tulip wood. Hingham buckets!! are of White Pine, with hoops of Ash. Round boxes of Ash, with ends of Pine. Hay rakes of Ash, with Walnut teeth. Scythe handles or snaths of Ash. Large baskets are of White Oak or Walnut. Whip handles of Walnut and White Oak. Picture frames of White Pine; small ones of Sweet Gum. Gun stocks for fowling pieces of Maple, for common muskets of Black Walnut. Wooden screws of Walnut and of Dogwood. Hatters' blocks always of Sour Gum, which is not liable to split. Wooden bowls of Poplar, Ash, &c. Axe helves of Walnut. Shoe lasts of Beech, Persimmon and Birch, &c. &c. &c.

FENCING STUFF.

In the most cultivated parts of the country, where forests are scarce, wooden fences are made chiefly with posts and rails. In the interior where materials are more abundant, the zig zag fence, called with us Virginia fence, is most used. Almost every kind of tree is occasionally appropriated to this purpose. Those which are considered most durable, most extensively used, are, in the District of Maine, New-Hampshire and Ver-

mont, of White Cedar, (*Thuja Occidentalis*,) next to which are Hemlock and Spruce. In the Genessee country, fences are chiefly made of Rock or Sugar Maple and Bass wood. In the lower parts of New-York, New-Jersey and Pennsylvania, the posts and rails are of White and Red Cedar, and of White Oak, all very durable. In the interior of Maryland and Virginia, on the Ohio, &c. a great variety of materials are employed. The best posts are of Locust, Chesnut, Mulberry, Cedar, Chinquapin, Walnut and Oak. The bars are commonly of White, Black, and Red Oak, or of Yellow Pine. In lower Carolina and Georgia, the zig zag fences are chiefly of Pitch Pine.

BARKS USED IN TANNING.

The bark of a great variety of trees is used in the preparation of leather. The Oaks are well known to yield the best kind. Those principally in use are the Grey, Red, Scarlet, Black, White, Spanish, Rock Chesnut, and Chesnut White Oaks. In default of Oaks, Hemlock is used in the District of Maine, Beech on the Ohio, and Loblolly Bay at the Southward. M. Michaux observes, that in Europe the tanners select small trees which have been cut for other purposes; and strip the bark even from the branches which are but an inch in diameter. In America, on the contrary, the largest trees are cut down for their bark only, and deserted after having only their trunks stripped.

FUEL.

Wood of almost every kind is used for fuel in the different parts of the United States. The Walnut or Hickory is uniformly considered the best, being the most compact and durable, as well as producing the greatest heat. The Oaks are next in value, and afterwards come the Maples, Birch, &c. &c. It is a fact not a little surprising that in a country which has been emphatically called the wilderness, the price of fuel should in the principal towns be equal, and sometimes even greater than it is in Paris, a city which consumes annually three hundred thousand cords of wood, and which is situated in a country almost entirely cultivated for more than 100 leagues around it. Such is the fact stated by M. Michaux, who ascribes this comparative price to the great care taken by European governments in man-

aging and preserving their forests ; while in America no care is taken to prevent their extirpation ; the woods are rapidly diminishing near the sea coast, the valuable kinds of timber are becoming scarce, and the price of fuel has doubled within 25 years.

On the whole, we consider the views and observations of M. Michaux as eminently deserving of credit and respect ; especially when it is recollected that they are the remarks of a man qualified by his course of life for the undertaking, furnished with more extensive opportunities for observation, than any one else, and devoting his attention for many years to this single object. Exceptions will no doubt occur as to the uses and resources of various parts of the country, where particular trees are found only for a small extent ; or where the old sources of supply have been exhausted, and new ones opened. But in a general point of view, the work may be considered as a faithful report of the practices which have resulted from common experience among the great mass of population ; aided by original, exact and scientific views of the characters and qualities of the different objects of the work. We are happy to understand that the plates are to be sent to this country, and a translation of the whole work to appear in a short time. It is only necessary to add that occasional errors of the press occur in the spelling of the Latin and English words which will, no doubt, be suitably attended to by the American translator.

ARTICLE XX.

Experiments on the Production of Animal Heat by Respiration. An Inaugural Dissertation, read and defended at the Public Examination, before the Rev. President and the Medical Professors of Harvard University, August 20, 1813. By Enoch Hale, Jun. M. D. Boston, Published by Cummings & Hilliard, No. 1, Cornhill. Cambridge.....Hilliard & Metcalf, 1813.

THIS is an interesting dissertation, and may be considered as adding some important facts to our present stock of physiological knowledge. The production of animal heat has been a subject of much interest and speculation. Like all other natural

phenomena it is susceptible of more illustration from simple facts and appropriate experiments, than it can receive from the most ingenious and complicated theories. It will be recollected that the experiments of Mr. Brodie formerly detailed in this Journal, favour the conclusion that no heat is produced by respiration in the lungs. Dr. Hale in the course of his inquiries was surprized to meet with results totally different in this respect from those of Mr. Brodie. Instead of finding that an animal in which artificial respiration was kept up, cooled faster than one which did not respire, and the lungs faster than the rest of the body; he found that the respiring animal retained its heat the longest, and that the lungs were the hottest part of the animal. We shall insert at length a part of the author's experiments, with his remarks and inferences on the whole.

EXPERIMENT I.

For my first experiment I chose two young dogs of the same age and size. A thermometer in the room at the beginning stood at 66° of Fahrenheit.

I divided the spinal marrow of the dogs between the occiput and atlas, leaving a sufficient interval of time between killing the two, to enable me to observe and note down every appearance in each, that might occur. Immediately after this was done, a small opening was made in the abdomen of each animal, and the bulb of a thermometer inserted, and retained till the mercury became perfectly stationary; when it was withdrawn, and the opening covered with adhesive plaister till another observation was made.

The first animal lay perfectly still without any struggle, from the moment of the division of the spinal marrow. The heat at successive times was as follows.

At the commencement the mercury stood at 96°.

Fifteen minutes after it rose only to 93½°.

In half an hour it was at 92½°.

In forty-five minutes at 91°.

In an hour and five minutes at 89°.

And in an hour and twenty minutes at 88°.

The thorax of this animal was not opened.

Immediately after pithing the second animal, I commenced artificial respiration by means of a common bellows, provided

with a double tube, (which was inserted into the trachea,) so contrived as to expire the air that had been breathed, without its passing into the bellows. In the course of the experiment some of the expired air was passed through lime-water, which it rendered turbid.

As soon as the respiration was begun, the animal had pretty violent contractions of the voluntary muscles, which frequently returned till near the end of the experiment.

At the commencement, the thermometer in the abdomen stood at 96° . The heart was felt through the ribs beating from one hundred and thirty to one hundred and forty times in a minute.

Fifteen minutes after, the pulsations of the heart continued vigorous, and as frequent as at first. The thermometer stood at 94° .

In half an hour, the pulsations continued the same. The thermometer was at 93° .

In forty-five minutes, no change in the pulsations. The thermometer was at 92° .

In an hour and five minute, the pulsations were about as frequent, and nearly as strong as at first. The thermometer stood at 91° .

In an hour and twenty minutes, the pulsations had grown so feeble as to be but indistinctly felt through the ribs. The heat in the abdomen was $90\frac{1}{4}^{\circ}$.

I now opened the thorax and immediately placed the thermometer in contact with the lungs, where it stood at $91\frac{1}{2}^{\circ}$. I then laid open the pericardium, and put the bulb of the thermometer in contact with the heart, where it fell to $90\frac{1}{2}^{\circ}$. This surprised me, and lest it might possibly be occasioned by the presence of external air after the thorax was opened, I carried the thermometer a second time to the lungs, when it evidently rose a full degree.

Blood oozed out from the small vessels as I cut into the fleshy parts, nearly as much as in a living animal.

The left side of the heart and the pulmonary veins were filled with florid blood, and the right side, and venæ cavæ with dark coloured blood. The heart continued to contract for some time after the thorax was opened.

Finding it extremely difficult to carry on a perfect respiration without a better apparatus, I procured a double bellows, so con-

structed that while one part filled with fresh air from the atmosphere, the other filled by exhausting the lungs of that, which had just been thrown into them. As the bellows closed, the fresh air was thrown into the lungs, and the respired air into the atmosphere. With this bellows the subsequent experiments were performed.

EXPERIMENT IV.

The temperature of the room was 71° . Two small animals of the same age and size, whose pulsations were one hundred and twenty in a minute, were killed by dividing the spinal marrow; and their temperature observed every fifteen minutes, by inserting a thermometer into an opening in the abdomen. Effectual care was taken that the thermometer should be affected by nothing, but the temperature of the animal. Between the observations, the opening was kept closed with adhesive plaster.

The pipe of the bellows was inserted into the trachea of the first animal, and respiration commenced immediately after it was pithed. At this time the thermometer in the abdomen stood at 98° . The inspirations was repeated forty times in a minute; and with such force as to imitate natural respiration as much as possible.

Soon after I dissected into the neck, and divided the nerves going from the head into the thorax, without injuring the large blood vessels.

There were several violent contractions of the voluntary muscles, during the whole course of the experiment; but they were less frequent in this than in some preceding ones.

Fifteen minutes after pithing the animal, the thermometer stood at $96\frac{1}{2}^{\circ}$. The heat beat as strong as at first, one hundred and twenty times in a minute.

In half an hour the thermometer was at $94\frac{1}{4}^{\circ}$. The pulsations of the heart were still the same.

In forty-five minutes the thermometer was 92° . The pulsations were one hundred in a minute, and rather more feeble than at first.

In an hour the thermometer was at 90° . The action of the heart was diminished to eighty-four pulsations in a minute, not quite so strong as before, though still very distinctly felt through the ribs.

I now began to open the thorax ; but the pipe of the bellows, just at this time, slipping out of the trachea engaged my attention, so that I did not get the thermometer fairly to the lungs till eight minutes after. It then stood at 89° . The temperature of the heart was about the same.

Blood flowed from the small vessels, as I cut into the fleshy parts. The heart continued to contract for some time after the thorax was opened, and irregularly after the respiration was stopped.

The other animal gave no visible signs of life, except for the first moments after it was pithed. The thermometer in the abdomen at first stood at 98° . In fifteen minutes, it fell to 96° . In half an hour to $92\frac{1}{2}^{\circ}$. In forty-five minutes to 88° . And in an hour to $85\frac{1}{2}^{\circ}$.

An hour and eight minutes after the animal was killed, the heat of the lungs was $88\frac{1}{2}^{\circ}$.

EXPERIMENT V.

The temperature of the room, the first part of the time, was steadily 68° . Two small animals, of the same age and size were killed as before, by dividing the spinal marrow ; and the process of cooling observed every fifteen minutes, by an opening in the abdomen.

In the first animal, respiration was commenced as soon as possible after it was killed. The respiration was compared with that of the living animal and made to imitate it pretty exactly.

No blood was lost in pithing the animal. It had entirely ceased struggling before the pipe of the bellows was fixed in the trachea ; but upon the first inspiration the muscles acted violently. While this was doing, an assistant placed the thermometer in the abdomen, and found the heat $102\frac{1}{2}^{\circ}$ *

The circulation went on as perfectly as could be wished. Not the slightest failure of the action of the heart could be perceived, either in force or frequency, for the first hour and a half.

During the first half or three quarters of an hour, the contractions of the abdominal muscles were so violent, as frequently to force out the intestines at the opening made for the thermom-

* The thermometer used in this experiment stood one degree higher than that used in the preceding. The difference was constant, in all variations of temperature.

eter, notwithstanding the attempts to keep it closed with adhesive plaster. Finding these attempts unavailing, I at length entirely closed the opening with ligatures, and made another very small one, which was also closed in the same way, except during the observations. This made the animal cool much faster at first than afterwards.

In fifteen minutes, the thermometer stood at 100° .

In half an hour, it was at 97° .

In forty-five minutes, at $95\frac{1}{2}^{\circ}$.

In an hour, at 95° .

Five minutes after this, there was a copious evacuation of urine. There had been none, as is common, when the animal was killed, though there was an evacuation of fæces.

An hour and fifteen minutes from the beginning, the thermometer stood at $94\frac{1}{2}^{\circ}$.

In an hour and a half, it was at 94° .

In an hour and forty-five minutes, it was at $93\frac{1}{4}^{\circ}$. The pulsation of the heart was now, for the first time, observed to be a little more feeble.

In two hours, the pulsation was much as at the last observation. The thermometer stood at 92° . I now opened the thorax, and applied the thermometer to the lungs and to the heart. The temperature of both was 92° .

The blood flowed freely from the small vessels, as I cut them. The arterial system was filled with florid, and the venous, with black blood. The heart continued its action some time after the respiration was stopped.

The other animal was not killed till the afternoon of the same day. The thermometer in the room had then risen to 71° , and towards the conclusion to 73° .

The spinal marrow was divided, and the animal suffered to lie, as in the preceding experiments.* It exhibited no signs of life. The thermometer in the abdomen stood at $102\frac{1}{2}^{\circ}$.

In fifteen minutes, it was at $100\frac{1}{2}^{\circ}$.

In half an hour, at $98\frac{3}{4}^{\circ}$.

Thirty-five minutes after killing the animal, I introduced the pipe of the bellows into the trachea, and began respiration.

* It was my intention to have carried on respiration in this animal with carbonic acid gas. But my local situation rendered it impossible to acquire even the simple means necessary to obtain the gas.

This was continued to the end of the experiment, with the same frequency and force, as had been used in the respiration of the other animal. No visible symptom of life was revived by it.

In forty-five minutes, the thermometer was at 96° .

In an hour, at $94\frac{1}{2}^{\circ}$.

In an hour and fifteen minutes, at 92° .

In an hour and a half, at 90° .

In an hour and forty-five minutes, at 89° .

And in two hours, at 86° .

I now opened the thorax. The heat of the lungs was 81° . The lungs were very full of blood, which, of course, was florid. Both sides of the heart were filled with black blood. I could discern no appearance of there having been any circulation.

From the foregoing experiment, I think it clearly appears, that sensible heat is, either directly or indirectly, produced by the respiration of animals, after the communication is cut off between the brain and the rest of the body. This heat is nearly in proportion to the effectiveness of the respiration in carrying on the circulation, and in producing the changes proper to the living state.

In the first experiment, notwithstanding the constant influx into the lungs of air more than 20° colder than the animal, the respiring animal, at the end of an hour and twenty minutes, was two degrees and a half warmer than the other; and the lungs were one degree warmer than any other part of the body. This last circumstance was probably occasioned by the effects of respiration being still produced in the lungs, after the vital powers were too much reduced to eliminate the heat in the different parts of the body.

The second experiment, taken by itself, proves but little; the respiring animal cooling faster than the other. But when viewed, in connexion with the third, its importance is very considerable. For although the respiration was so imperfect, that the action of the heart, produced by it, never exceeded seventy-six pulsations in a minute, and much of the time was hardly perceptible through the ribs; yet it was sufficient to keep the temperature of the lungs equal to that of the rest of the body, for the space of an hour and twenty minutes, when breathing an atmosphere almost fifty degrees colder than the animal. Whereas, in the third experiment, with the lungs inflated in the same manner, in the same temperature of the atmosphere, the lungs

cooled nine degrees more than the abdomen, in only twenty-five minutes; although here there was also an action for a short time, capable of producing heat, as appears by the slow cooling of the animal at first.

The fourth experiment gives a result still more decisive. The respiration being more perfect, we find, at the end of an hour, the respiring animal four and a half degrees warmer than the other. In this and the second experiment, the lungs of the non-respiring animals were considerably warmer than the rest of the body. This is precisely what we should expect, when we consider that air *confined*, (which is the state of the air in the cells of the lungs,) is one of the slowest conductors of caloric known.

The fifth experiment shows the effect of inflating the lungs, without the changes answerable to those of the living state. I have only to regret the accidental protrusion of the abdominal viscera, which cooled the respiring animal so much at first. But, notwithstanding this accident, the temperature of the lungs and abdomen of this animal, at the end of two hours, had fallen only to 92°; while in a warmer atmosphere, the abdomen of the other animal, in the same time, fell 6°, and the lungs 11° lower, being only 8° above the surrounding air.

It is a matter of regret to me, that Mr. Brodie's results are totally different from those I have obtained. One cause may perhaps be, the loss of substance occasioned by separating the head of the respiring animals. As this was not necessary to a complete destruction of the nervous connexion of the brain with the body, I did not do it. In one or two instances, I divided the nerves of the neck, in others, I only divided the spinal marrow.

The separation of the head, however, is not sufficient to account for all the difference between Mr. Brodie's experiments and mine; and I confess, I know not how to reconcile them. I will only observe, therefore, that my experiments were begun under a strong persuasion, that the contrary from what now appears was true. They have all been performed in the presence of respectable gentlemen, who were uninfluenced by any opinion I might afterwards adopt, and who were witnesses to the faithful record of every leading fact that occurred.

The correctness of Dr. Hale's experiments and inferences will derive no small support, from the following recent statement.

Mr. Brodie, member of the Royal Society of London, has attempted to ascertain the state of the temperature and secretions in animals that are kept alive (by inflating the lungs) after being decapitated. I have, says M. Le Gallois, repeated the experiments of this author so far as relates to the temperature. It has not appeared to me that the results which he announces are so uniform as he states. Mr. Brodie assures us, that decapitated animals, which are kept alive, cool as fast as if they were dead. It is true that they cool considerably. But I have always found that young cats cool less than after death. The difference in my experiments has been from 1 to 3 centigrade degrees. In rabbits it is generally somewhat less.

INTELLIGENCE.

Davy's Elements of Agricultural Chemistry.

THE celebrated chemist Sir H. Davy has published an extensive experimental and scientific work on Agricultural Chemistry. He has instituted an examination of the general powers of matter upon vegetation, whether gravitation, cohesion, chemical attraction, heat, light, or electricity. He has minutely investigated the organization of plants, the constituent parts of soils, and the nature and constitution of the atmosphere with its influence on vegetable life. An extensive experimental inquiry is made into the product and nutritive qualities of different grasses and other plants used as the food of animals.—An American edition of this work is shortly to appear.

Epilepsy.

A new remedy has been proposed for the cure of this disease by Dr. Percival, of Dublin, who has inserted three cases of its administration in the Edinburgh Medical Journal for July, 1813. In so untractable a disease as epilepsy, in the treatment of which the most skilful practitioner is frequently baffled, we would not discourage the trial of any remedy, however remote the probability of its answering the acknowledged indications of cure. We cannot say, however, that the perusal of these cases has much prepossessed us in favour of the medicine here recommended. In the first case, the disease appears, as far as we can judge, to have been combined with hysteria; her bowels were habitually costive, and the catamenia had been occasionally irregular. After a variety of active purgatives and antispasmodics had been given, without removing the epileptic fits, the author directed two drachms of oil of turpentine to be diffused in the way of emulsion, by syrup, in a pint of mint water, an ounce of which was prescribed to be taken every four hours. On visiting his patient two days afterwards, he was agreeably

surprised at learning that she had experienced no return of her convulsions after the first dose of her medicine. That a few minims of oil of turpentine should immediately remove so obstinate a disease, appears extraordinary; and the same effects are said to have taken place, in the same patient, a few months afterwards; yet some other circumstances may have contributed to the effect in both cases. When she first took the medicine, the catamenia appeared on the second day, which had been suspended for six or seven weeks; her long interval (from April to November) from fits, may therefore perhaps be attributed, in some measure, to this circumstance. It is very certain, that during the second time of giving the medicine to this patient, (we mean in November) much good was produced by an active cathartic "removing a large load of fæces." The terebinthinate mixture was given for ten days longer, and she had no fits till the eleventh of December. The turpentine was again exhibited, and she had continued free from *any acute attack* of epilepsy till February 1813. This period, however, is too short to pronounce her cured, especially as she is occasionally subject to cramp, or spasm of her abdomen. "At these times she commonly reclines upon her bed, and if seized suddenly will even fall, but never loses her recollection or sensibility" The immediate effect of the medicine was, according to Dr. P. no less evident in the second case, and the fits were suspended, for a time, although they recurred with equal or greater violence afterwards. This patient had been subject to the disease fourteen years; and during the last eighteen or twenty months, her intellects had been much disturbed. When she began to take the emulsion, "her epileptic fits immediately ceased. She continued the medicine for a fortnight, when her intellect was perfectly restored, her spirits revived, and her looks greatly amended." The third patient commenced the terebinthinate mixture on the fourth of November, which had an immediate effect in abating the frequency and duration of her fits. Until the fourth of December the fits of epilepsy had nearly disappeared. Recurring again without any manifest cause, the turpentine was given with some temporary benefit; but on the twenty-ninth of the same month it was reported to the author, that the patient had "relapsed to her former epileptic habits." It would be

desirable to ascertain if this remedy will produce even temporary relief, in other hands ; and we wish future trials of it to be made.

Arsenic.

This medicine is highly extolled by Dr. Kinglake as a remedy in herpetic affections, who has given it in a variety of cases with decided benefit, some of which are related in the Medical and Physical Journal. It is a singular circumstance, that the beneficial effects of the remedy are not apparent until after its use has been sometime discontinued. In one case, the patient was directed to take ten drops of Fowler's solution three times a day ; "this was continued during about three months, without any sensible inconvenience to the general health, and without much apparent amendment of the complaint. So little benefit, indeed, was thought to have been obtained from it, that it was at length discontinued. In the course of a few weeks after, however, the eruptions ceased to be renewed, and those that were on the surface became progressively less troublesome, until they totally subsided, leaving only the skin discoloured under which they were situated." Under such circumstances, it is natural enough for the patient to deny to the medicine, any share in the cure, attributing the benefit rather to the discontinuance than the efficacy of the remedy. Dr. Kinglake, however, offers the following explanation. "It is probable, that the high stimulating effect of the remedy, whilst using, is such, as to prevent its beneficial operation from being observable ; that although the diseased action, against which the medicine had been directed, might be overcome, yet the arsenical excitement of the part would remain equally violent, and be mistook for an unaltered continuance of the original affection." Notwithstanding Dr. Kinglake speaks of the constant exhibition of arsenic for three months, without detriment to the general health, we cannot divest ourselves of apprehension that it may lay the foundation of subsequent irreparable mischief, and should, by no means recommend its general employment to such an extent.

Resuscitated Salivation.

In a long paper under this title, inserted in the Medical and Physical Journal, Dr. Yeats has related a case, wherein he supposes a variety of symptoms which came on during the use of mercury, to have been removed by inducing another salivation at a distant period, (fifteen months), called by him resuscitated salivation. The whole case, however, appears to us to bear a very different explanation. "E. P., aged twenty-two, a female, complained of a great tightness all around the waist, with a swelling on the region of the stomach towards evening, to such an extent as to oblige her to unlace her clothes; dyspnœa; occasional pain about the stomach; appetite indifferent; no thirst; no vomitings nor sickness of stomach; and no particular uneasiness after taking food.—Other remedies failing to relieve her, she was put upon a course of mercury, both by friction and pills, which brought on salivation in about three weeks. On the commencement of the salivation, she felt a constant inclination to make water, with a bearing down pain, and straining at stool, &c. Two days after the commencement of the salivation, on taking some broth, she felt a squeamishness at the stomach, and the broth was thrown up; and from that time till the second mercurial course was begun, the vomiting continued. The author at first endeavoured to palliate by correcting the acidity by antacids, acknowledging there was appearance of much organic mischief; it afterwards occurred to him, that the severity of the symptoms might have originated from a deranged state of the chylopoietic organs, induced by some error during the first mercurial course; he therefore rubbed in mercurial ointment twice a day with due precautions. Two months after this second mercurial course, it is reported, that the condition of the patient is very comfortable to what it was previous to the re-introduction of mercury. That this amendment, however, was not owing to the resuscitated salivation, we judge by the following quotation from the author.—"About a week previous to the affection of the mouth, the following symptoms occurred. She was seized about five in the morning with a most violent pain in her stomach and bowels, which lasted three hours, when she took a cup of warm green tea, which was instantly rejected, accompanied with a good deal of glaucous matter, *having the*

appearance in some parts of it of pus. A liquid stool soon followed, which contained the *same kind of matter* as that which was rejected by vomiting, in the opinion of her attending surgeon. For several days previous to this, she was in *considerable pain across the stomach*, with a great sensation of weight, which was only relieved by large doses of opium. About five or six hours after this violent paroxysm, she took two table spoonfuls of mutton broth, which to her unspeakable comfort did not come up; for this was the first food of any kind that had remained upon her stomach for fifteen months." Query, Was the amelioration in the state of this patient, owing to the termination of inflammation by suppuration, or to the resuscitated salivation?

Brain Fever.

Several cases of disease under this name have lately been inserted in the Edinburgh Journal. The last number of that work contains a very methodical description of this disease from the pen of Dr. S. Burton Pearson. We formerly expressed an opinion of its being in reality a variety of the low nervous fever, modified, perhaps, in some measure by its exciting cause, *intoxication*. If we understand Dr. Armstrong rightly, he described this affection as sometimes arising from a single act of intoxication; Dr. Pearson, with more apparent justness, assigns its cause to be *frequent* and *excessive* intoxication. We seldom meet with so much real practical information in so small a compass, as Dr. P. has here afforded us; we shall, therefore, give the substance of Dr. Pearson's communication. The following is his description of the Brain Fever.

"It is preceded by tremours of the hands; restlessness; irregularity of thought; deficiency of memory; anxiety to be in company; dreadful nocturnal dreams, when the quantity of liquor through the day has been insufficient; much diminution of appetite, especially an aversion to animal food; violent vomiting in the morning; and excessive perspiration from trivial causes. The above symptoms increase; the pulse becomes small and rapid, the skin hot and dry; but soon a clammy sweat bedews the whole surface of the body; confusion of thought arises to such a height, that objects are seen of the most hideous forms,

and in positions that it is physically impossible they can be situated; the patient generally sees flies or other insects, or pieces of money, which he anxiously desires to possess; and often occupies much time in conversations of negotiations, if he be a commercial man. Often, for many days and nights, he will continue without rest, notwithstanding every effort is made on the part of the physician to appease his mind, by variety of conversation, and variety of stimuli.

“He frequently jumps suddenly out of bed in pursuit of a phantom, and holds the most ineffable contempt for the practitioner, if he do not concur in his proceedings. He commonly retains the most pertinacious opinion that he is not in his own house, and that some of his dearest relations have sustained a serious injury. During the concurrence of these symptoms, he often can answer medical questions properly for a short space of time, and then relapses into the raving state.” The following are given as the diagnostic signs. “It is distinguished from putrid fever, in never being contagious, or having purple spots; or ever having a cadaverous smell; or ever being received from human effluvia: and in the delirium being much more impetuous. It is distinguished from inflammation of the brain and its membranes, by not having so vehement a fever; or redness and turgescence of the eye and face; or impatience of light or noise; or hard pulse; and by opposite causes, and opposite method of cure.”

Treatment.—“A full dose of opium should be immediately administered in a glass of wine, and repeated in smaller doses for several hours successively; the quantity of which should be regulated by the constitution of the patient, habit of intoxication, degree of the disease, and other concomitant circumstances. The patient, if he eagerly request it, may be allowed to walk from room to room, and the most consoling language should be used by his attendants. The debility of the system should be resisted by sherry gruel, cold wine, and porter and soup; which may be given in sufficient quantity, as the stomach, in this complaint, is very tenacious of what it receives. I never saw the bark, blistering, or effusion of cold water on the head, of any use. Every unnecessary restraint should be carefully avoided; therefore the straight jacket, which is so universally employed, is the most injurious remedy that can be applied; for, by the

perpetual efforts the patient uses to rid himself from confinement, he excites profuse sweating, debilitates the muscular fibre, and soon exhausts the vital principle. If the above mode of treatment be successful, or at least affords the unhappy sufferer a chance of recovery, the impoverishing the system by bleeding, strait-jacket, or abstinence from invigorating remedies and diet, must be extremely mischievous.

Puerperal Diseases.

Dr. Sutton, of Greenwich, has employed cold water, in the form of lotion, to the abdomen, in puerperal fever, with very great success. Perhaps, however, there may be some doubt whether the disease here described was the genuine puerperal fever; yet the success which followed the employment of the water, in the present instance, will, as the Doctor says, be a strong inducement to its use in similar instances, and in the less doubtful and acknowledged forms of puerperal fever. The most material circumstances of the case are, thus related: "The patient I was called to visit had been confined six days, and this was the second day of the attack of the present illness. She had a very quick and weak pulse; she was very pallid and exhausted from the diarrhœa she had undergone; and while I was with her she had two violent attacks of pain in the flanks, so great as to occasion considerable moaning, and expressions of severe suffering. The belly was not particularly tense, but tender on pressure; there was a dry febrile heat; the tongue was coated, the milk quite gone, and the lochia had ceased, with the exception of a trifling watery discharge. The treatment that had been adopted was an endeavour to mitigate the symptoms of diarrhœa and pain, to moderate the fever, and to support the patient, which had not been attended with success; and as there was a degree of local pain, which indicated the presence of inflammation, the state of the patient, and the events that had lately taken place, occasioned me to desire a trial of cold to the parts attacked with pain, in the manner I had employed it for the cure of peritonitis. The other remedies prescribed were moderately astringent medicines, with opium in such quantities as the pains appeared to require; and it was agreed, if necessary, to open the bowels by clysters, and by the

mildest purgatives." It appears, that the patient was very soon relieved by the use of the cold lotion, and afterwards used it, intermittingly, for ten days; and on discontinuing it entirely, some uneasiness of the abdomen again occurred, when she was again relieved by the same remedy. Five out of six cases, treated afterwards in the same way, likewise recovered.

New Medical and Physical Journal, Aug. 1813.

English Botany.

Dr. Smith and Mr. Sowerby, have determined to finish their celebrated work, "The English Botany," by a general index to the thirty-six volumes, which will be completed on the first of January, 1814. It is intended to arrange the names of the plants in that work, which will amount to nearly 2600, in one part alphabetically; and in another part, according to the Linnæan system, with such improvements as have been received since its publication. When the English Botany is completed, Mr. Sowerby hopes to be able to comply with the wishes of his numerous friends, in publishing his "Mineral Conchology" every month. The British and Exotic mineralogy, will, in all probability, be finished in the course of the next year.

Tilloch's Mag. July, 1813.

Dr. Smith's Introduction to Botany.

A popular introduction to Botany, by the learned President of the Linnæan Society has passed through two editions, and is now in general use among Botanical students in Great-Britain. It contains the usual scientific definitions, a general view of vegetable physiology, with its recent discoveries and improvements; and a full explanation of the Linnæan classes and orders. An American edition of this work is now in the press, and will be ready for delivery in a few days, by the publishers of the New-England Journal.

A singular fact, related in the history of the late Governor Sullivan's case of organic disease of the heart, which some persons have appeared to doubt, is explained by the important experiments of M. Le Gallois. This was the occurrence of sus-

pension of the circulation in one arm, without a loss of sensation and motion. When a ligature is applied to the great artery of the lower extremity, although, in this case, the circulation of the limb may be wholly suspended. Yet sensation and motion continue for a time. But if the ligature be applied to the abdominal aorta, sensation and motion speedily cease in the extremity. The cause of this singular difference, in effect is, that in the latter case a supply of blood is cut off from that part of the spinal marrow, which furnishes the extremity with nerves. For the life of the limb depends on the spinal marrow, and the life of the spinal marrow depends on the blood sent into it. Cut off the supply of blood to the spinal marrow, it dies, and immediately those parts it supplies with nerves die also.

Massachusetts Agricultural Repository and Journal,
No. 1, vol. III.

The Trustees of the Massachusetts Society for promoting Agriculture, have displayed a very uniform and laudable zeal in forwarding the objects for which their Institution was established. The first number of a new series of their publications, has appeared in the form of a periodical work. They propose to continue the numbers quarterly, should their stock of communications be sufficient for the purpose. From the interest manifested by this Society and its branches in different parts of the State, as well as from the solid and useful character of their publications, very favourable consequences are to be anticipated, both to cultivators of the soil and to the public at large.

Dr. Dorsey's Elements of Surgery.

The learned adjunct professor of Surgery, in the University of Pennsylvania, has recently published a System of Surgery, in two volumes 8vo with many plates; of which we have seen sufficient to enable us to pronounce it one of the best elementary works which has of late appeared.

Description of the Arteries.

A new work on the arteries has appeared in this town, agreeably to a notice in our last number.

A translation of the interesting researches of M. Le Gallois, is just published in Philadelphia by M. Nancrede.

Dr. James. of this place, has just published a very useful and popular Treatise on the management of the Teeth.

Medical Institution of Harvard University.

The medical lectures commenced in this town, as usual, on the first of November. They are delivered daily on all the branches, until the beginning of February. The removal of the winter course from Cambridge to Boston, has been followed, as was anticipated by its friends, with an increase in the number of its students, in some degree proportionate to its present superior advantages. While the institution was confined to Cambridge, it could rarely count twenty students of medicine and the same number of students from the University. Immediately on its removal to the metropolis the number was considerably augmented, and has continued to increase each year until the present course, when it amounts to nearly fifty. These and some gentlemen of the metropolis attend the winter course, while an additional spring course is given to the students of the University. The number of medical graduates last year was twelve. During the same year this institution has dispensed instruction to more than one hundred and twenty students, including those of the University. The advantages for practical instruction, may be considered as annually increasing.

Hooping Cough.

M. Bertrand having vaccinated twenty-one children labouring under the hooping cough, draws the following conclusions. 1. That the progress of Vaccination, even in its most perfect state, produces little or no effect at the attack or during the first stage of hooping cough. 2. That the cough is alleviated by vaccination, when the disease has arrived at its second stage. 3. That when the hooping cough is in its last stage, vaccination produces a remarkable and, as it were, specific effect upon it. In the first stage it produced only a slight effect upon one out of nine children. In the second stage the disease was sensibly influenced in

five out of seven children ; and in the third stage, out of five children, one obtained an immediate cessation of the cough, and three were sensibly relieved during its further progress. On one it produced no effect ; but the strength of this child was so reduced, that the vaccine pustule, although possessing its true character, went through its course but very imperfectly.

TO CORRESPONDENTS.

In the present number the Editors have taken some pains to present to their readers, in a condensed form, the principal scientific news of the day. The number of articles from foreign sources, has excluded several original pieces of merit which have been received. Communications are on hand from Dr. M. Willard of Albany, Dr. Sewall of Ipswich, and several others. A valuable pamphlet from the committee of the Medical Society of the county of Saratoga, (N. Y.) has been received, but is mislaid. As the Editors are desirous to make public, in this section of the country, the facts it contains, another copy is solicited.

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APRIL, 1814.

[No. II.

REMARKABLE CASES IN MILITARY SURGERY.

[Translated from Baron Larrey's "Chirurgie Militaire," for the New-England Journal of Medicine.]

THE Gun-Shot wounds, complicated with fracture, which our soldiers received in Syria, especially the wounds of the os humeri, although carefully dressed, were generally followed by accidental articulations. The two fragments of broken bone remained moveable, because they were prevented from uniting by the motions of the patient, which wore off their asperities and salient angles. The extremities of these fragments became rounded and covered with a cartilaginous substance, which facilitated the motion, which the patient could make in different directions without pain, although in an imperfect manner.

I attribute these accidental articulations to the following causes :

1. To the continual motions which the patients were exposed to, from their departure from Syria, until their arrival in Egypt, having been obliged to travel on foot or on horseback.

2. To the bad quality of the food and to the brackish water, they were obliged to use, on this painful journey.

3. To the quality of the atmosphere in Syria, which was almost always deprived of a portion of vital air and charged with noxious

gases, proceeding from the numerous marshes, near which we continued a long time.

All these causes might prevent the formation of callus, either by diminishing the calcareous phosphate or by destroying the contact between the broken bones.

The usual methods of remedying these accidents were employed, but without success.*

Sometimes it happened, in the campaign, that slight wounds in the shoulders, without injury of the bone, were followed in every case, by a complete or partial palsy of the limb; which never happens in Europe, unless the principal nerves are cut or disorganized.

In these cases, I had reason to suspect nothing more than the lesion of some superficial nervous branches of the cervical nerves, which, by reason of their communication with the brachial plexus, might derange the course of the nervous fluid in the branches of this plexus. It is possible, also, that the asthenic and stupefying qualities of the climate of Syria, at the season we passed through it, might have produced the palsy of the injured limbs.

At our return to Egypt, where the air is more pure, I restored the motion and sensation of the paralysed limbs in many cases, by the application of the moxa, more or less frequently repeated, and followed by the application of ammonia, to prevent inflammation and suppuration in the parts burnt. The use of mineral waters together with the climate of Egypt, completed the cure in cases where the moxa alone had not been sufficient.†

* The author states, in a note, his objections to the practice of cutting off the ends of the bones, of introducing a seton, etc. he thinks proper to leave the case to nature.—EDITOR.

† The palsy produced by wounds of the limbs or by the plague exhibited, as the latter disease does, many instances of relapse. I have remarked, that these were particularly apt to occur during hot and moist weather, especially in the spring.

General Dorsen, colonel in the Imperial Guard, who had been wounded at the battle of Abou-qyr in the year 1801, by a ball on the top of the left shoulder was suddenly affected in the year 1806 with a complete palsy of the arm of that side. Aromatic, alkaline, stimulating embrocations and blisters applied to the scars restored the sensation and motion of the limb. At the time, when the general was attacked with this accident, the weather was cloudy and the heat excessive. These phenomena confirm the influence which the electric fluid or other atmospheric principle produces on the human body.

But if the wounds our soldiers were affected with during the season of the *khamdyn* (hot wind) were crossed by many bad accidents, mostly produced by the influence of the atmosphere; on the other hand, we shall see the wonderful rapidity with which many wounds were cured in Egypt during the season of the north winds. All Egypt then possesses a pure and serene sky; the burning, but uniform heat of the day, is tempered by the winds which rise with that orb and pass over with it. To these salutary influences must be added, besides the assistance of the surgeon, the excellent quality of the lint we employed,* the good management of the hospitals, their healthy situation, and an excellent regimen.

This concurrence of circumstances serves to explain why the wounds of amputated limbs were cicatrized before the *thirtieth* day;† why the operation for the stone has been cured in fifteen days; why trepanning practised on a great number of wounded was uniformly successful; why enormous wounds, penetrating the chest, the abdomen, or the limbs, and accompanied with loss of substance, have been cured rapidly and without accident.

The greater number of authors have forbidden the application of the trephine over the frontal sinuses, on account of the uncertain depth of these cavities, and of the air fistulæ resulting from them, which are often considered incurable. I departed from this rule in two instances, and performed the operations successfully and without great difficulty.

Francis Berrard, a guide of the army, received at the third assault of Acre, a gun-shot wound in the right frontal sinus. The ball, in fracturing the external wall of this sinus, was cut into two pieces; one passed on to the forehead running under the skin about half an inch in length; the other penetrated the sinus and fractured its internal wall. This accident was followed by a loss of sense and by slight symptoms of concussion.

The external fracture was not extensive, so that it was hardly possible to believe that it had allowed the passage of half a bullet. The fragments were not displaced, so that I was obliged to apply

* Virgin lint, made of new linen, beaten and washed.

† This time would not be thought very short by a surgeon of the English or American school; but it is to be recollected that the French surgeons do not employ adhesive plasters in these cases.—EDITOR.

the crown of a trephine over the sinus, and by this means I succeeded in discovering the foreign body and a fracture of the internal wall of this cavity. I extracted the lead pretty easily by means of an elevator, and the opening made by the trephine permitted me to pass in a small conical crown, by the aid of which I succeeded in perforating the roof of the sinus. Between the cranium and dura mater, a little blood was effused which escaped through the opening of the trephine. The edges of the opening exfoliated afterward ; the perforations closed by membranous substances, and the cicatrix of the integuments formed immediately, without an air fistula.

In the same affair, a case absolutely similar presented itself in a person named Fromentin, a grenadier of the 69th demi-brigade. A portion of ball lead entered the left frontal sinus in the same way and considerably shattered its two walls. The external was reduced to fragments, which were easily extracted ; but it was necessary to apply the crown of a small trephine on the internal wall, which re-established the functions this accident had deranged, and the soldier recovered in as short a time as the former.

I have also trepanned over the passage of the dura-matral artery, at the inferior and anterior angle of the parietal bone. The artery was divided in the operation ; but I almost immediately stopped the bleeding by the application of an iron probe, heated red hot, and the wounded man like many others, in the same situation, got well. Among these cases there was one, very remarkable.

A soldier of the 18th demi-brigade received a gun-shot wound in the head, at the first revolt of Cairo. The ball, after having pierced the frontal bone, at its middle part near the sinus, took its course obliquely between the cranium and the dura mater, and thus passed over the longitudinal sinus as far as the occipital suture, where it stopped. Its presence produced all the consequences of compression, without its being possible to determine the situation of the foreign body : however, the wounded man always referred the pain to the point diametrically opposed to that where the ball had entered, and all the other symptoms left no doubt of its existence in the cavity of the cranium.

I introduced a sound of gum-elastic through the hole in the os frontis, and caused it to pass, by the channel made to the ball, which I easily recognized by its resistance and its inequalities. By my instrument, I exactly measured on the out-side the length of the

passage it had gone through ; I then concluded to open the point of the cranium which corresponded with the foreign body. I made this counter-opening with a large crown of trephine. Matter issued in great quantity, and then I readily found and extracted the ball, which rested on the dura-mater and compressed the brain. The patient experienced no other difficulties.

We have seen gun-shot wounds in the face with almost total destruction of the two jaws, cured without the individuals being deprived of the use of speech, or of the power of swallowing or even masticating.

Louis Vauté, corporal in the 88th demi-brigade of infantry of the line, during the siege of Alexandria, was struck in the face by a ball, which carried off almost the whole of the lower jaw and three quarters of the upper jaw, from the second molar tooth on the right to the articulation of the left side. The whole of the two jaw bones, the bones of the nose, the ethmoid and all the bones of the nasal fossæ, the os malæ or cheek bone of the right side, and the zigoma were all shattered : the eye of the same side destroyed ; the soft parts, corresponding with the bones, torn away ; the tongue cut through in the middle ; finally, the back part of the mouth and nostrils was completely laid open ; great inverted flaps of the teguments and muscles of the neck and of the left cheek, left the jugular vessels and the articular depression of the jaw quite naked. Such was the state of this enormous and horrible wound, when I found this unfortunate man, in one of the corners of a hospital in Alexandria, where his comrades had left him, under the persuasion that he was dead. In truth the pulse was almost insensible, the body cold and without appearance of motion.

I administered to this poor man all the assistance in my power. He had taken nothing for two days, so that my first care was to make him swallow two cups of soup and a little wine, by means of an œsophagus tube. His strength revived ; he raised himself a little, and testified by signs the most lively gratitude ; for he was unable to articulate a word. I washed the wound, removed all the foreign substances, cut off the soft parts which were disorganized, and applied a ligature to the vessels thus opened ; finally after having *freshened* the flaps, I brought them into as accurate contact as possible and retained them so by two or three sutures. I united also, by the same means, the two portions of

the divided tongue; I covered the great excavations with a split cloth dipped in warm wine. I applied fine lint and over the whole, a retaining bandage.

Although I had not the slightest hope of saving this patient, I continued my attentions to him. He was made to drink every three hours a cup of broth and some spoons-full of good wine through a tube, with a funnel fitted to it. The dressings were frequently changed, on account of the great discharge of saliva and other fluids.

This treatment produced the happiest effect: Louis Vauté improved daily; suppuration took place in a favourable manner: the eschars were separated; the edges of this enormous wound approached each other; adhesion of the parts took place, and this soldier was in a condition to go to France at the epoch of the evacuation of Alexandria, thirty-five days after the accident. The cicatrization of all the parts was subsequently completed.

After having been nourished during the fifteen first days by means of the flexible tube, the wounded man was able to swallow boiled meat and broth by means of a spout-cup and afterwards with a spoon. He continued to employ these procedures, continually improving, till he had recovered his flesh and health.

This respectable soldier, who may be seen at this time at the Imperial Hospital of Invalids, speaks sufficiently well to be understood, especially when this great opening is covered by a silver mask.

M. ——— aid de camp of General Verdier was struck in the mouth by a pistol shot, which carried away the whole of the left cheek, from the angle of the lips to the masseter muscle; so that the two alveolar arches, the tongue and a portion of this muscle were uncovered. The edges of the wound were inverted and blackish; the officer experienced the most severe pains. I hastened to *freshen* the flaps and make the wound regular, so as to lay the edges in perfect contact and fixed them by nine points of suture and applied a proper bandage. The wounded man was put on a light regimen, and cooling medicines which prevented fever and other accidents. The treatment continued but seventeen days, at the end of which he was cured with little deformity. A similar case presented itself in my practice, in the army of the Rhine.

Here is another curious fact. A grenadier of the 9th demi-brigade named Fournier, for six weeks kept a piece of bayonet

about an inch and a half long in the bottom of the gullet, on the left side, bellow the velum palati. The presence of this foreign body which had been sought for in vain, produced almost a total loss of speech. I felt this body at the bottom of the throat, and by the aid of a pharyngotome, I incised its covering, laid bare the fragment and extracted it. Immediately he recovered the use of his speech, and was cured a few days after. It seems that this foreign substance compressed the laryngeal nerve of the 8th pair, which is essential to the organ of voice.

Another case equally remarkable will show what varieties the wounds of fire arms present.

A man named Michel received a gunshot wound at the battle of Abou—qyr, the 21st of March 1801. The ball passed in, at the angle of the jaw, crossed the throat obliquely and came out in the jugular region of the opposite side. The base of the tongue was furrowed, and the epiglottis carried off. The wounded man spit it out after the accident, and showed it to the surgeon who first dressed him. The fact is also proved by the consecutive symptoms.

The patient suffered but little, yet his voice was hoarse and feeble, and could be heard with difficulty. When he attempted to swallow, for the first time, he was seized with a convulsive suffocating cough, accompanied with vomiting. Being tormented by the thirst, which the heat of the season and the irritation of the wound produced, he perpetually renewed his efforts to drink and always with the same results. He passed four days in this painful situation. He already experienced violent pains in the stomach, and constant sleeplessness, and his pulse became small and accelerated and he began to be emaciated.

Such was the condition of this patient, when I saw him on the fifth day, at my morning visit. After having questioned him as to the circumstances of the accident, attempted to make him drink and examined the inside of the throat, I was satisfied that the cause of the suffocation and of the impossibility of swallowing depended on the permanent opening of the glottis, the valve of which was shot away. An accident very singular and I believe without example.

The prognostic in this case was unfavourable, and I have no doubt that if this soldier had been abandoned to the resources of nature alone, he would have perished in a few days. The indica-

tions were very difficult to accomplish; these were, to appease the hunger and thirst, with which this honourable victim was tormented, and this is all that art could do in such a case. I was very fortunately provided with an œsophagean tube of elastic gum, which I introduced with the necessary precautions into the pharynx, and by the aid of this, I caused the patient to swallow, at first, a small quantity of cooling drink, which relieved him greatly and afterwards excellent soups.

I repeated this operation before the surgeon who took care of him, and he was careful to repeat it, as often as circumstances required. I watched with attention the course of the disease, and I had reason to be convinced of the truth of what Desault had formerly remarked to us, that the sensibility of the mucous membrane of the larynx is relative. For the smallest drop of any liquid, which passed into the larynx, instantly produced all the difficulties we have mentioned while the accidental slipping of the tube into the larynx was not attended with more inconvenience than when it was introduced into the pharynx; and in consequence of this analogy of impression, a mistake was sometimes made. We could only be certain that the tube had passed into the larynx and not into the pharynx, when on pouring down the first drops of liquid, the patient hastily pushed back the hand that was to relieve him, and was instantly seized with a suffocating cough, which often put him in great danger.

The passage of air is not, as authors state, a sure indication that the tube is in the larynx, for it equally came through it when it was evidently placed in the œsophagus.

In order to avoid this inconvenience, I directed the flexible tube obliquely backward, as far as the cervical vertebræ and pushed it gently in the same direction, forcing it to bend slightly that it might enter the pharynx: and in order that there might be no mistake, I began by causing a few drops of liquid to pass first, the swallowing of which satisfied me, that the rest might be poured down with safety. In the contrary case, I changed the direction of the tube to make it enter the guttural fossa, which it did with certainty when assisted by the finger, passed to the back part of the throat.

This method, continued a long time, saved the life of the soldier. The wound cleansed itself, produced little suppuration and the cicatrix easily formed. The difficulty of swallowing, however, continued, and the power of speech was not re-established till

after the lapse of considerable time, and even then in a very imperfect manner. At the end of six weeks, he could swallow a little panada made thick, without a conductor. The first deglutitions were very painful, but by habit they became more easy, till at the period of his departure for France, he could swallow very thick rice, which was prepared for him in the form of bullets. It appeared that these aliments escaped the glottis, which they constantly struck against, only because they were of sufficient size and solidity to slip over its edges, without being able to enter between them. When I placed this soldier in the corps of invalids, I gave him a particular certificate, in order that he might receive the aliments proper for his situation. The functions of speech and deglutition have, with time, become more perfect; no doubt, because the arytenoid cartilages may, by enlarging, have in part supplied the place of the epiglottis and the part of the base of the tongue, corresponding with the glottis, may have expanded itself.

General Murat was wounded at the battle of Abou—qyr in 1799, at the moment that victory fixed on his standards. A ball passed through the throat from the right angle of the jaw to the left side of the neck, near the superior attachment of the sterno-mastoid muscle. This projectile after having divided a part of the masseter muscle and the branches of the facial nerve, penetrated the mouth; taking an oblique course backward and downward, it probably injured the ninth pair of nerves, passed before the jugular vessels and appear on the outside, near the attachment of the muscle, already mentioned.

Deglutition was, at first, very difficult; the voice was hoarse and interrupted. I dressed him on the field of battle, and continued my attentions to him until the epoch of our departure for Cairo. His wounds were then in a fair way for recovery.

I have already spoken of a wound in the neck, with rupture of the carotid artery, which was cured by compression.

Another formidable wound of the neck, occurred in a soldier named Peter Soult, of the 22d of Chasseurs, who received from a mameluck, at the battle of Saleyheh, a wound from a sabre, which after having cut through the skin and the protuberance of the occipital bone divided the extensor muscles of the neck, down to the sixth cervical vertebra, the spinous process of which was cut off. Hence result an enormous flap, inverted over the shoul-

ders, and the head being unsupported fell down upon the breast. I obtained the union of this great wound by means of a number of sutures and a uniting bandage.

The wounded man returned to his corps, a short time after, perfectly cured.*

[*To be continued.*]



TWO CASES OF RUPTURED UTERUS.

COMMUNICATED BY J. G. COFFIN, M. D.

[For the New-England Journal of Medicine, &c.]

March, 1809.

Mrs. A. aged thirty five years, a domestic in the family of Mr. F. was taken in labour. This woman had borne several children before without any unusual occurrence, and had been as well as is common, for her state, till the night of the twelfth instant, when her travail began. The membranes had given way and the waters were discharged in the night; after being for some time wet, she went at day light from a lower to an upper apartment.

It was some hours before she could be made comfortably warm after great chilliness. I saw her at eight o'clock in the morning when her pains were pretty frequent and severe. On examination I could merely feel the head of the child just entering the pelvis. The contractions of the uterus etc. continued with considerable regularity till half after twelve, when the head had advanced to within one or two inches of the os externum.

About this time, after several pains, attended with great distress and uneasiness, the efforts of the system suddenly abated, the patient became cold, pale and covered with sweat.

She now complained of a new kind of pain and insupportable distress about the navel, a little to the left side. These symptoms continued, with unceasing severity for two hours, when she expired; before which the head had retracted some inches.

Before this accident the bowels had been evacuated by the use of enemas. At one time I contemplated taking blood from the

* I afterward saw this soldier, who informed me, that from the period of his wound, he had been deprived of the generative faculties.

arm, but as the pulse did not seem to indicate this measure, bleeding was omitted.

Immediately after the accident every means was used to support the declining temperature and strength of the patient, and to lessen her suffering, but without any success.

The next forenoon the body was examined by Dr. J. C. Warren, who has favoured me with the following minutes of the dissection.

The appearances on the examination of the body of Mrs. — were, as far as I can remember, the following.

The external appearance of the abdomen was irregular, from the existence of a large protuberance in the central portion of it, which was supposed to be the head of the child.

When the abdominal parietes were removed so as to lay bare the peritoneum, a dark substance was seen through the transparent membrane, on puncturing which, fluid blood was discharged from the cavity of the abdomen, in great quantity. The uterus being exposed, was found contracted to half of the size it should be of, before delivery. Behind it, lay the head of the child, which had been forced through the posterior and inferior portion of the uterus, at that part where it joins with the vagina. The placenta was also expelled into the cavity of the abdomen. The substance of the uterus, around the lacerated part, was thin, tender and of a very dark colour. All the cellular membrane of the lower portion of the uterus was filled with blood, as well as that which was connected with it, in every direction. The breech of the child lay in the fundus of the uterus and constituted the tumor felt externally.

SECOND CASE.

August 16, 1812.

I saw Mrs. B. this afternoon at three o'clock and was informed that the waters of the uterus had been recently discharged. The contractions of this organ were neither considerable nor frequent; at eight her pains had gradually increased. At this time I found the os uteri pretty largely dilated, and, as I supposed, the head of the fetus advancing, which at ten P. M. had descended to within one and a half or two inches of the os externum.

So far the progress of the labour had been slow and tedious, and the sufferings of the patient seemed to be beyond the usual degree, compared with the expulsive force of the pains. Before the hour just mentioned I had taken a pint of blood from the arm of Mrs. B. who was a very large woman and of a plethoric habit. Her body had been opened by injections. Soon after ten she complained of severe distress of the abdomen, accompanied with uterine hemorrhage and sick stomach. The pains abated and the head receded almost beyond the reach of the finger.

She vomited several times, was restless and in great distress. In this deplorable state, apprehending the accident which had happened, I could only desire her to remain as still as possible, for her sufferings had led her to an almost incessant change of position, and have recourse to an anodyne.

After taking fifty drops of tincture of opium several times, she was somewhat relieved, and at four o'clock A. M. she seemed inclined to sleep. From an engagement to leave town I was now obliged to leave the patient in the care of Dr. Gorham, who has obligingly furnished me with the following notes of the termination of the case, and of the examination of the dead body.

"*August 17—8, A. M.* Was called to Mrs. B. She was sitting in an easy chair. Her respiration was somewhat hurried and laborious; the pulse was about 100, moderately full and hard; the abdomen was very tense and painful, and she complained of great thirst and flatulence. Mrs. B. had no parturient pains since Dr. C. had left her; but at 3 o'clock there had taken place a discharge of a small quantity of blood per vaginam and another at 7 o'clock.

Examined with the hand in the vagina once two fingers in the uterus, but could feel nothing of the child.

11, A. M. Her situation is nearly the same as in the last report. She feels the pressure of the child high up on the right side, and cannot lie on that side. Ordered a purgative.

Having no doubt from the history of her case, that a rupture of the uterus had taken place, I proposed a consultation, which from unavoidable circumstances could not be held before 3, P. M. when, in the presence of Drs. Warren and Hayward, I passed my hand into the uterus, and moved it in various directions, meeting with no other obstructions than those arising from the sides of the organ itself, and the placenta, which was completely detached. On the posterior part of the uterus, about half way between the

fundus and the neck, I perceived a longitudinal fissure, through which I passed two of my fingers into the abdomen. The same circumstances were noticed by an examination by the gentlemen who were present, and they were perfectly satisfied that a rupture of the uterus had taken place, through which the child had been forced into the abdomen. As Mrs. B. had not felt any motion in the child for 12 or 14 hours, and as its extraction, could not save its life, while, from the contracted state of the uterus, it might have proved speedily fatal to the mother, it was thought best not to attempt it. She was ordered to have an enema and anodynes.

11, P. M. Has had one copious alvine evacuation; has vomited matters of a coffee-ground appearance, bowels tense and painful, profuse sweat, pulse frequent but firm, has been very faint.

August, 18, 8, A. M. Has had no sleep, vomits continually a blackish fluid, profuse sweat, pulse very quick, thirst excessive, abdomen very tense, great dyspnoea; countenance pale and distressed; is very feeble.

8, P. P. Vomits incessantly a very dark green coloured fluid with flocculi of a coffee-ground appearance, pulse 115, moderately firm. Other symptoms the same as in the preceding report.

August 19—6, A. M. Delirium; vomiting; fluttering pulse; respiration suspirious; cold sweat, in which state she continued until 11 o'clock, when she died.

APPEARANCES ON EXAMINING THE BODY, AT 4 P. M.

External Appearances.—Abdomen immensely large and tense, measuring more than a yard from one groin to the other; slight discolouration about the inferior parts on puncturing; a large quantity of very foetid air rushed out.

When the integuments, which were more than two inches thick, were divided, and the flap was laid over the pubes, the child came into view, its back presenting and lying among the intestines, which appeared to be cemented together by thick coagula of blood. Its head was firmly pressed under the right lobe of the liver, the left hand embracing the left foot, rested in the right iliac region; its body passed diagonally across the abdomen, the right foot being pressed against the left ileum, and the right arm forming a line with the body. The child, which was a male, was putrid and much swelled, the cuticle separating when it was handled.

When it was removed, the umbilical cord was traced to the placenta, which was found in the cavity of the abdomen, nearly at the posterior part of the uterus. The uterus itself was much contracted; its substance was very firm and about two inches in thickness. On its posterior portion a longitudinal fissure was discovered sufficiently large to admit three fingers; its cavity was small, but the fingers introduced per vaginam could be readily passed through the ruptured part into the abdomen. The intestines and peritoneum were highly inflamed, and there was a considerable quantity of very foetid, reddish coloured liquid in the abdomen.

J. GORHAM."

REMARKS.

Notwithstanding the diversity of opinion among accoucheurs respecting the Cæsarian operation, the following propositions seem to be sufficiently established, namely:

1st. That the operation in itself is not essentially mortal.*

2d. That there are certain cases in midwifery wherein the life of the mother, of the child, or of both depends on the removal of the contents of the gravid uterus; and

3d. That in some of these cases, this operation is the only means by which the patient can be delivered.

4th. There have been and may again be cases in which this operation has saved the life of the mother, of the child, or of both.

If these propositions be admitted to be true, it follows that the operation is occasionally not only proper, but also of indispensable importance.

It has been objected to the Cæsarian section, (and gastrotomy, for I include both operations, if they are to be considered as two,) that it is a hazardous operation, that it may be badly or unnecessarily performed, etc. All this is doubtless true, but these objections exist in equal force, if any, against all the higher, more difficult and important operations in surgery. If a limb were never to be amputated, nor a stone nor a tumour to be removed till a fortunate issue could be *certainly* foreseen, the surgeon would become a much less valuable member of society than he now is.

* See Baudelocque, Denman, and Smellie.

The truth of the second proposition, it is presumed, will be granted by all.

The third proposition is true in those instances of deformed pelves, diseased vaginæ, and ruptured uteri, in which from the circumstances of any of these cases, delivery through the natural passage is impossible. The last proposition is confirmed by the authentic record of many cases in which this operation has been practised with success. No reasonable objection against this resource of art can be raised from the fact that it sometimes fails, because we know it has succeeded and may again succeed in similar cases; and these successful instances may fairly be supposed to be such, as admitted of no other possible chance of saving life.

From these views of the subject, it is extremely difficult to perceive any rational foundation for the unqualified rejection of the practice in question, by Messrs. Sacombe and Simmons,* or any one else. So far from agreeing with these gentlemen, I should say that this operation is not duly estimated, particularly in this country, where I cannot learn that it has ever been performed. The hour of sudden danger, painful apprehension and alarm, is not the proper season for discussing and deciding on questions of serious import and great responsibility.

Hence the necessity that practitioners of midwifery, should deliberately make up their judgment as nearly as may be, before they are called on *to act*, in what cases and under what circumstances it is requisite to have recourse to this expedient, and to be prepared to discharge their duty accordingly.

Every student of surgery should, as far as possible, familiarize his mind and his hand to the operation, under the impression that he may be required, in the course of his professional duties, not only to determine on the propriety or impropriety of this measure, where life is at stake, but also to do the operation.

How many lives have been lost from the neglect of this means of relief, we can never know; but from the limited extent to which it has been carried, and its comparative success when tried, there is no doubt in my mind, that this loss has been extensive.

Nor can I hesitate to believe, that the obstetric art would be *improved*, if in all civilized communities, there should be, for the time to come, in every town or neighbourhood, one person duly qualified to decide in what cases it might be proper to adopt this

* See the last Number of this Journal.

expedient, and to perform the operation. It is not to be supposed that the practitioner, who has never been convinced that this operation may sometimes be necessary, who has never performed it on the dead subject, nor seen it done on the living, can be disposed and prepared to try it, if a case should occur in which it might be unequivocally indicated.

Nor can we imagine, that an individual acquainted with the operation, with a case before him in his opinion requiring it, who should recollect that it had never been done in his vicinity or country, and that all the medical men about him were opposed to it, under these discouraging circumstances should possess sufficient fortitude and regard to principle, voluntarily to encounter all the responsibility and unpleasant consequences, which a discharge of his duty would be likely to involve.

Mrs. B, whose misfortune has occasioned these remarks, lived two days and an half, after the rupture of the uterus took place; and the fetus and its appendages had all escaped from this organ into the abdomen.

Supposing the fetus, &c. to have been expelled from the uterus at the time of its division or immediately after, as is probable, and that they had all been reasonably removed from the abdomen, by gastrotomy, is it not more probable that the patient would have survived the accident and operation, than that she should have lived sixty hours in the condition she did? It is possible too, that the life of the child might have been preserved by a timely resort to the operation.

DESCRIPTION OF A DISEASE PRODUCED BY THE USE OF MERCURY;

ABSTRACTED FROM THE PUBLICATIONS OF ALLEY, PEARSON, &c.

DR. George Alley, of Dublin, has published "Observations on the Hydragryia; or that vesicular disease which arises from the exhibition of Mercury." In the introduction to his work, Dr. Alley has given a short history of the disease, and the reasons for substituting the term hydragryia, for eczema, a genuine name of some diseases under the order vesiculæ.

The hydrargyria is characterized by an eruption, which is very variable in its appearance. These varieties in the appearance of the eruption being usually accompanied with corresponding symptoms indicative of the medicines or peculiarity of the disease, justify the division of it into three species.

1. *Hydrargyria mitis vel sine febre*; 2. *hydrargyria simplex febrilis*; 3. *hydrargyria maligna*.

1. *Hydrargyria mitis*. This species has at a first view nothing to characterize it further than a light rose coloured efflorescence; an attentive observer, however, by holding the affected parts between him and the light, and keeping his eye on a level with them, may perceive the surface to be studded over with innumerable, minute, and transparent wrinkles; but to the naked eye the vesicular appearance is sometimes with difficulty perceptible. Heat and itching attend the striking out of the eruption, and slight headach and nausea, in some cases, exists for a few hours. At times the smarting itching which attends the striking out of the eruption is not continual, sometimes attended with accelerated pulse, and flushing of the face.

The efflorescence though not close at first, is gradually diffused over the parts affected, viz. upper part of the thighs, groins, scrotum, lower part of the abdomen, &c. and it usually is confined to these parts. If, however, mercury be used after its appearance, it does not long remain local, the colour of the eruption in this is sometimes as dark as in the second species; the spots are minute and distinct however, unless the use of mercury be persisted in after their appearance. In this as in the other species, the colour of the eruption recedes on pressing, and suddenly returns, when the pressure is removed, and the finger will readily detect an inequality of the surface. At times the efflorescence fades away without any desquamation, when however the vesicular appearance is very manifest, a slight scurfiness may be observed after a few days, and the natural colour in some instances is not regained for some time after the desquamation has commenced. This species by an incautious use of mercury while it exists may degenerate into the second, and even third, or be produced in an aggravated form by a too early removal of the mineral. This is however, contrary to Mr. Pearson's experience who states that "it has even occurred where the patient has been sent out of the hospital that he might enjoy the benefit of a pure atmosphere."

2. *Hydrargyria simplex-febrilis*. The eruption in this species is preceded by fever, it is accompanied with itching of the skin, and is considerably more rough to the touch than the efflorescence in the same species. From being distinct the spots soon become crowded together, and after the third day the natural colour of the skin cannot be discerned. This eruption may be distinguished from measles by the spots being larger in the former, and not appearing in the annular form which is the case with measles.

Mr. Crampton, however, thinks it very difficult for the first two days to distinguish them, the eruption is of a dusky reddish hue, and if mercury be laid aside it is seldom darker than on the second day. The parts attacked are various, in males sometimes the scrotum, thighs, sometimes however, the backs of the arms and hands, or the back and abdomen are first affected, contrary to what occurs however, in the first variety, it gradually spreads over the entire surface of the body. In this species at times the vesicular appearance of the first, may be noticed, especially on the first striking out of the eruption. When on the decline the eruption may be mistaken for the last of scarlatina anginosa, at a similar period: the duskiness of colour which it always preserves will enable a careful observer to distinguish them.

This species may be distinguished from the first, by the greater separation of the cuticle. This is usually preceded by soreness of the throat and fauces. This latter symptom is of short duration. Desquamation generally commences on the fourth day of the eruption, and the earlier it occurs the milder in general the disease. It has been observed, that successive desquamations at times take place, and that this is chiefly observable in cases in which mercury has been used after the formation of the disease.

The febrile symptoms mentioned as the precursors of the eruption are followed by a considerable degree of oppression about the præcordia, a hard cough and difficult respiration. The skin is usually very dry, heat very great; from 102° to 106° , and is in no disease perhaps more steady or permanent. Sometimes, indeed, in this species, a very fœtid perspiration takes place, where there is much attrition of surface, as in the axilla, &c.

The pulse, though full, is not in general hard and varies from 100° to 130° in the minute. The febrile symptoms, except the headach and nausea, increase as the disease proceeds, and does but seldom abate with the desquamation. The eleventh day has hitherto been considered critical.

3. *Hydrargyria maligna*. This species is ushered in with the same symptoms as the last. But Mr. A. considers the following as almost certain indications of the distressing nature of its termination. 1. The sense of burning on the surface is experienced to a very painful degree. 2. The actual heat of the skin becomes intense. 3. The soreness of the throat and fauces is extreme. 4. The colour of the eruption is darker, rising sometimes even to purple, and there is considerable tumefaction of the surface. 5. Vesicles of a larger size than in the former species precede desquamation.

It must be remembered, that the other species may degenerate into this, by continued use of mercury, and even by continuing the patient in the venereal ward of a Hospital. A most painful burning sensation accompanies the tumefaction, and immediately preceding desquamation the heat has risen to 108° . Blisters are now formed and discharge an acrimonious lymph. So numerous are the vesicles that the whole cuticle desquamates from the tumefied parts, as in that species of *Roseola attendant* or small pox. As the disease advances, the discharge acquires a most offensive odour, one which will be readily recognized, after having been once experienced. The discharge also becomes more acrid and viscid. Desquamation is later in this than in the other species, not occurring in some cases till the tenth day. The separation commences with cracking of the scarf skin, scabs form on the surface. The eyelids partaking of the general tumefaction are sometimes closed; and so irritable at times is the surface, that blood instead of lymph attends the desquamation. The cuticle sometimes separates in large pieces, thus, that of the hand will come off, so entire as to resemble a glove.

The desquamations which succeed, discover a surface less red, and exposed, and the discharge ceasing the epidemis is renewed. Painful tumours sometimes occur in different parts of the body, they suppurate and heal kindly. While desquamation is only commencing in some parts, a thin acrid matter often exudes in others. The cuticle also when regenerated at times cracks, and separates again; and in some cases, after the disease has disappeared in every other part of the body, one particular place remains discoloured and extremely sore. The cuticle, in some severe cases of this species, is not the only part separated; but so deep does the desquamation extend, that in one patient who was very much pitted

with the small-pox, no pits were discoverable after his recovery. In other instances the hair from the chin, axilla, &c. has been completely removed by the desquamation. Dr. Alley observes, that the febrile irritation is, in general, proportionate to the severity of the external symptom. The affection of the lungs is among the first and most distressing symptom. In some cases great sense of weight and oppression about the præcordia and difficult respiration are the most distressing; in others hard and incessant cough, and a fixed pain in the chest are superadded. The pulse is hard as in pneumonia; and during fits of coughing, severe headach is experienced. Delirium has not been observed. The soreness of the throat is very distressing in some cases for many days, sometimes hoarseness and hæmorrhage from sloughing of the lining membrane of the fauces has occurred. At first the tongue is white, it becomes however parched, and black in the centre, towards the conclusion. The pulse continues quick, but loses its fulness; it becomes weak and frequently irregular. The secondary fever is the most dangerous, and is so in proportion to the extent of the disease and the depths of the desquamation. True hectic at times occurs in these cases, and frequently diarrhæa supervenes, constituting the most formidable symptom of the disease. Convulsions sometimes occur, and at others the fæces and urine are discharged involuntarily.

As the hydragryria has been mistaken for other diseases, Dr. A. subjoins the following brief recapitulation of its most leading features.

1. The eruption is, for the most part, at first vesicular.
2. The fever and eruption are generally synchronous in their appearance.
3. Exfoliations of the cuticle usually take place, about four days after the appearance of the eruption, and is commonly preceded by soreness of the throat and fauces.
4. In several cases, blisters, sometimes large vesications precede desquamation. The cuticle, in such cases, cracks and forms fissures; and the odour of the exudation from the surface, is strongly characteristic of the disease.
5. The presence of the delirium ferox has never been witnessed, however considerable the inflammation and tumefaction of the external parts of the head; nor has the head appeared engaged, excepting where the debility was extreme and the exudation from the surface profuse.

6. When the cuticle desquamates, the parts underneath appear red, as before that occurrence.

7. The disease is never fatal unless secondary fever supervene.

The cure of this disease is very simple. It consists, first, in removing the exciting cause and then its effects. Mr. Pearson has thought, in some cases, the continuance of mercury proper. Dr. Alley and his friends, who have seen a good deal of the disease, are decidedly of a contrary opinion. Having, therefore, according to Dr. A. relinquished the use of mercury, purgative medicines are to be liberally exhibited in the highly excited state of the system in the early stages of the disease, and the tepid bath used in the eruptive stage. Emetics do not appear to be indicated. In the latter stages of the disease, tonics and stimulants will be proper. Acids, however, though given before, must be laid aside now, as they may increase diarrhæa. Should they be very much craved by the patient, opium must be combined with them in such quantities as will prevent their purgative effect.

The pectoral symptoms, though severe, generally yield very readily to purging; and as the urine is sensibly increased when these symptoms are yielding, the digitalis has been suggested as a remedy which promises some benefit during the symptoms. Wine has been found far better than the bark in the latter stages of the disease; and "for the *generation of a new cuticle*, Dr. Spear recommends the linimentum aq. calcis, and, as far as my observation extends, it is the best application." Dr. Alley's work contains, in an appendix, some cases and details of practice; and at the end are three very excellent coloured plates, illustrative of the three species of the disease.

In the course of the above remarks, Mr. Pearson's observations on this disease, which he calls *eczema mercuriale*, have been mentioned. In them, he states, that he never met with a fatal case of the disease; that in cases in which it occurred while using mercury for a particular disease, he has continued it without aggravating the symptoms; that he knows of no circumstance of exposure that will conduce necessarily to its production, and of peculiarities of constitution he has not facts enough to determine where they exist, but that there are "certain habits of body," in which this disease may be excited, he has no doubt. In confirmation of this, he states, that the smallest quantity of mercury, even an accidental application of some of its preparations, as of the

Hyd. Nit. Rub. has produced it by merely falling on the surface. Mr. Pearson believes the disease may be cured by the powers of the constitution; but as the patient may be benefited by medical treatment, he recommends antimonials, saline draughts, purges, opium and camphor combined, sarsaparilla with bark given liberally, and the acids according to the circumstance of the case. The patient's diet should be light and nutritious, and till the desquamation of the cuticle has somewhat advanced, fermented liquors are not generally advisable. Great attention to cleanliness is absolutely necessary, and the warm bath will answer this indication better than any other mean. He covers the part of the surface in which desquamation has taken place, with a soft mild cerate, consisting of litharge plaster, yellow wax and olive oil. This should be spread thickly on linen rollers, and renewed twice in the day. Mr. Pearson admits that cases may occur, in which some deviation from his treatment of the *eczema mercuriale* may be necessary; but twenty years experience, encourage him to believe it will be generally found successful.

DESCRIPTION OF AMERICAN MINERALS.

BY JOHN F. WATERHOUSE, M. D.

[Communicated for the New-England Journal of Medicine.]

Continuation of the Silicious.

GENUS.

Zeolite. **W**HITE, radiated on trap, and crystalized in small veins of trap.

Jasper. Dark red, very good quality, Chelsea, Lynn, Stoughton, where it also forms the base of porphyry. An inferior quality, near New-Haven, (Conn.)

Mica. Common, very large, Andover, Bedford, on the Albany and Hartford road, New-Bedford, (Mass.) Banks of the Schuylkill, (Penn.) colour white, purple, olive green, almost black; also crystalized in regular six sided tables, Banks of Schuylkill. Beautiful amethystine saggitate crystals in granite with the Indicolite and Tourmaline. Var. b. and Cyanites, Goshen, (Mass.) Mica-

aceous schistus occurs in great abundance in the District of Maine and on the Connecticut River, containing Garnets, Beryll, the Granatite or Staurotide, Tourmaline, &c.

Plumose Granite, Williamsburg, (Mass.) Here the felspar, mica and quartz are beautifully disposed in the solid granite, like a gracefully waving ostrich feather, of about the colour and brilliancy. Resembles Tremolite.

FELSPAR. *Var. a.* White and light green; crystalized in rhomboidal prisms; and rhomboidal tables, with angles truncated. Their surfaces are frequently glazed. In a vein traversing transition greenstones sometimes imbedded in and projecting from Epidote. Charlestown, (Mass.)

Var. b. White, flesh red and green; and these alternating with each other in stripes, parallel to the sides of the crystals,* as may be seen in those that are fractured. With variety a. but distinct from it.

Var. c. Long tables, composed of two thin white or redish tables, between two greenish or brown thicker ones. They intersect each other at various angles, forming cavities, containing a fine brown clay or umber. Diseminated through transition greenstone with the Phrenite, Charlestown, (Mass.)

Var. d. Rhomboidal prisms, imbedded in granit, Naushon-Island, (Mass.) Large masses, white, greyish, and reddish; specular; very handsome. New-Bedford, (Mass.) Near Philadelphia, much more beautiful. District of Maine. Crystalized, but not easily referable to any form, but with various truncations. In Granite, Chesterfield and Andover, (Mass.) Upper Schuylkill Bridge, (Penn.)

Var. e. Thin transparent rhomboidal tables with the angles truncated, projecting into cavities:—also lamellar, opaque; so much

* In all of them we find a slight difference in colour, forming stripes parallel with the sides and terminations of the crystals; but in some, a white oblong parallelogram edged with green, red or both; or else a green or dark one edged with white; or a red stripe within a white crystal. Frequently we find rhomboidal cavities lined with felspar, sometimes two or three colours, or at least shades, disposed as above; these again lined with minute Phrenite and Quartz crystals. Some would say that this is only by a decomposition of the felspar, but we have doubts, since, in another instance, we believe we can demonstrate that the exterior of the crystals is formed first, in opposition to Haüy's idea, on which account we are so particular here.

resembling lamellar Sulphate of Barytes, that every one pronounces it such, at first sight, and only believes himself wrong after a strict examination. The tables are convergent, and in a few specimens radiated, and very rarely stellated. With Tourmaline vary. c. d. and e. in a *laying mass* of granite in micaceous schistus, Chesterfield, (Mass.)

Var. f. Adularia. Moonstone—white, with slight tinges of yellow, green, or blue; hard scratching quartz: a threefold cleavage. In the oldest granite formation. In the granite which is traversed by the lead vein of the Southampton lead mine.

Var. g. Compact Felspar.* Passing from white, through pale red to brownish red. Structure, tabular, the pale red and the darker alternating so as to resemble delicately striped ribbon. Sometimes it is variegated, as if broken up, and cemented again like a Breccia, strongly resembling mutton, when the muscles are cut transversely; the tabular structure representing the muscular fibres, and the interruptions, the separation into muscles. Sometimes it becomes porphyritic by being interspersed with crystals of felspar, and not unfrequently with Epidote. Large hills in Milton, (Mass.) Strata run, N. E. and S. E. almost vertically; inclination N. being about 80°. In Woburn and West-Cambridge, (Mass.) there is a *felspathic rock* of great extent, red and white, and frequently coloured dark brown, externally by oxide of iron. In Woburn it contains a bed of the Sulphuret of copper and Magnetic iron, not however ascertained to be extensive or valuable. The refinement of either copper or iron ores is rendered difficult by a mixture with each other, as in this instance.

Opal. Opalescent quartz: light, resembling opal precisely and containing Rutile. Trenton, New-Jersey.

* We feel a diffidence in pronouncing this *Vary. compact felspar*, because we know not that any other person has so denominated it. We are, however, well aware that Mr. Godon's argillloid, or what we have seen for it, is really this substance changed by decomposition and exposure to the air, and soaking in water with decomposing vegetables, from which the potash might have been derived. It is compact, hard, perhaps tough, as it may be bruised by the hammer; no brilliancy; melts before the blow pipe; fracture not conchoidal, easily decomposed. These characters distinguish it from Chert or Horn-stone.

OBSERVATIONS ON THE REMITTING FEVER,

Which prevailed in the city of Albany, in the Summer and Autumn of 1809.

BY DR. MOSES WILLARD.

THE last winter was remarkably cold and severe: The spring was also cold and dry. Vegetation did not come forward as early as usual. Very little rain fell from the breaking up of winter, until about the 10th of July; at which time it began to rain, and continued without much intermission, for about fourteen days. At the same time the weather was so cold, that warm clothing and good fires were almost as comfortable as in winter.

This continuance of rain, caused the Hudson's river to overflow its banks, and do much damage in the low lands to grass, grain, &c.

In this place, the docks were covered, the cellars in the lower part of the city filled with water, and all low places inundated; many of which could not be drained; and the water was left to stagnate and to be exposed to the sun.

The latter end of July, a remitting fever began to make its appearance, which has continued through the season, till this time, January 1, 1810. However, the cases now are comparatively but very few.

The summer has been remarkably cool; there having been but few days but what fire has been comfortable some part of the twenty-four hours.

There has been but very little rain from the rainy season above mentioned, until this time.

THE SYMPTOMS.

At the commencement of the fever, the patient generally makes but very little complaint, for the first two or three days. In some cases, however, the attack has been more violent. The patient complains of a general heaviness and languor, with some loss of appetite, and supposes he has taken cold.

But on the third or fourth day, he feels an unusual weight on the back of his neck, as if pressed with a yoke; with some degree

of stiffness and soreness in the muscles of the part when he attempts to move.

In some cases there is an unusual dull, heavy pain at the stomach.

This symptom was very distressing to me in this fever. At times my distress from this cause was so great that it was with much difficulty I could get my breath.

It appeared to me, from the sensation, as if a cord was fastened to the vertebræ, and, passing up through my body, passing out at the inferior end of the sternum; and that a person was standing on my breast and pulling up by this cord.

A painful sensation of fullness is felt in the abdomen, and especially in the region of the liver; with a pressure upward against the diaphragm, so as to render sitting very uneasy.

A costive habit, dryness of skin, and tongue somewhat furred with a whitish coat, was observable.

Pain in the loins and inferior extremities, was generally complained of.

The pulse in general full and strong.

In the first stage of the fever, (in general,) not much pain in the head, but in the progress of the fever, there was some pain of the head, attended with a loss of memory and dizziness.

In many instances, high inflammatory symptoms, so as to render repeated bleeding necessary.

In one instance, I was obliged to take about three pounds of blood in the course of two days, before these symptoms gave away.

Urine in small quantity, and very high coloured, of a reddish yellow.

In all the cases I have met with, there was evidently an inflammatory diathesis.

In those cases where I took blood, it exhibited an inflammatory buff, similar to what appears in blood drawn in a pleurisy.

In some cases, there was a remarkable constipated state of the bowels, requiring the same powerful means to obviate it as is necessary in a bilious colic.

In one of these cases, the medicines not operating in due season, and my patient being in great distress, I recollected what that true student of nature, Dr. Rush, had observed upon a similar point, and finding that my patient's pulse would admit of the loss of blood, I immediately opened a vein, and while the blood was

running he called for the close stool, and had a large and free discharge from his bowels, which gave him immediate relief: and the medicine then had such a thorough operation as to effect a complete cure, although it was the first dose he had taken.

METHOD OF CURE.

As to this, as far as I have been able to obtain information, I believe that there has been a great difference in opinion among the physicians of this city, with regard to the treatment of this disease.

I understand that some have placed their dependance on the free use of mercury. so as to produce a full and free salivation, and this continued to a great degree, &c. But as to the success of this practice and its consequences, I leave for others to decide upon, since, according to my ideas of the nature of this disease, this practice did not appear to me to be indicated.

Not having had an opportunity of knowing precisely the opinions of other physicians as to the nature of this fever, and their mode of treatment, I shall confine myself to the method I have adopted, with my reasons for so doing, together with its effects.

I have long been of opinion, that nature does point out by certain characteristic symptoms, in all diseases, the part or parts affected, and the nature and extent of that affection; together with the method of treatment most proper for her relief.

I do not say, that all diseases are curable; but experience has already proved that many diseases have become curable, which had been thought incurable in ages past.

I am therefore led to believe that no disease is necessarily incurable: but am very willing to suppose that many prove so, in consequence of the imperfection of the medical art. Hence I think that this should be the physician's motto, viz. "*Nature is the Guide.*"

If, therefore, after all the advantages we may have had as physicians, in our medical studies, in knowing the opinions of both dead and living authors, if we are not able, in some measure, independent of other men's opinion, to read and understand the book of *Nature* for ourselves; that is, at the bedside, to comprehend and understand, by the characters or symptoms nature there exhibits, and in consequence of this be enabled to administer by prescribing for the symptoms, instead of the name of a disease, and in this way in subservience to nature afford

relief; I fear it will not be in our power to do much good to our patients, or add much to the common stock of real medical knowledge, for the good of society, or the benefit of those who may come after us.

There are two things which stand in the way of mankind's acquiring true and useful knowledge, viz. indolence and credulity. Yet many are fond of being thought wise men, and for this purpose clothe themselves with a fine borrowed dress, and, like the butterfly, sport in the rays of the sun, in order to dazzle the eyes of the multitude; but, when weighed in the balance of true merit, they are found wanting, and like the meteor, soon sink in night: having been too indolent to descend into the shade of the valley and there to have pursued nature in her humble path, for the purpose of obtaining truth and real science for themselves. But rather being willing to indulge their credulity, and receive for facts what they have gotten by rote, and thus imagine themselves very wise and learned, in being able to retail what other men have known and said, instead of making this only a foundation on which to raise the superstructure for themselves, from their own experience, observation, and knowledge.

My particular attention having been called to the phenomena attending this fever as above recited, it appeared evident to me, that there was a congestion of blood in the abdominal viscera.

When we consider the severity of the last winter, the coldness of the spring, together with the cold rainy season immediately preceding the commencement of this fever; and I might add the conformity of dress to the season of the year, rather than to the state of the weather: all these circumstances tending to check perspiration and prevent a free circulation of blood to the surface of the body: furthermore, agreeably to the law of fluids, which press in every direction equally where the resistance is the same; yet if there is a resistance in one part and less in another, fluids will be congested where there is the least resistance.

There was a remarkable sensation of fulness in the abdomen which gave the patient much uneasiness.

Although there was also a costive habit, this symptom did not altogether depend on that circumstance; for in many instances, although the bowels had been freely evacuated, this symptom

was not relieved until blood was freely taken, although there was no fixed pain in any particular part.

This point may be further elucidated by adverting to the anatomy of the parts, and the economy of nature. "The branches of the cœliac and mesenteric arteries distribute their contents to the stomach, intestines, pancreas, and spleen, besides the hepatic artery which supplies the liver with blood for its nourishment. The blood circulating through all these viscera excepting the liver, being returned by their respective veins, is poured into their common trunk, the vena portarum; thus the origin of the vena portarum appears to consist in the concurrence of all the veins of the peritonæal viscera except the liver."* If, therefore, there existed any obstruction in the liver to prevent the free return of blood from those parts to the heart, the consequence must be a congestion of blood in the abdominal viscera. From the phenomena attending this fever, that appeared evidently to me to be the fact.

The peculiar anatomy of the liver, with its secretions and excretions, together with the qualities, the use, and the importance of the bile in the animal economy; and the effect of a disordered state of the liver on the rest of the body, and especially on the rest of the glandular system, appears to me to have been too much overlooked in the doctrine of diseases in general.

That there was a congestion of blood in the abdominal viscera, is further evinced by the discharge of blood from the bowels, which took place in some cases which appeared to be critical, giving relief to the patient, although the quantity was so great as to cause serious apprehensions that the patient would sink under the loss of so much blood.

I think, however, I am correct in saying, that this symptom only made its appearance in some full habits where there had not been sufficient evacuations from the bowels and the vessels not had been relieved by bleeding.

A constipated state of the bowels was another symptom which claimed peculiar attention in this disease.

When food is taken into the stomach and digestion has taken place, it passes the pylorus and enters the duodenum, at which place the chyle begins to be taken up by the lacteal vessels, to be conveyed into the receptaculum chyli, and from thence con-

* See Saunders on the Liver.

veyed by the thoracic duct into the left subclavian vein to be mixed with the circulating mass of blood.

Now a certain time will be necessary for the lacteals to perform this office after every meal.

It then will follow that if there is a morbid excitement as to the peristaltic motion of the intestines, their contents will be too suddenly evacuated; hence a part of the chyle will be discharged with the excrementitious part, and the system deprived of that proportion of nourishment it otherwise might have had. On the other hand, if the peristaltic motion of the intestines be retarded, and what nature designed as excrement be too long retained in the intestines, the lacteal vessels continuing their action, a portion of excrementitious matter will be taken up and conveyed into the circulating mass of blood, which will act as a poison, and produce a disturbance to nature, and prove a source of irritation and fever.

This is not the only thing to be taken into consideration; for it is evident to reason, that if excrement be retained too long in the intestines, there will be a congestion of morbid matter, which will not only act as a septic poison, but as an extraneous body producing uneasiness and disturbance throughout the whole system.

From the symptoms above enumerated it was evident to me, that there was a want of action in the glandular system in general, and especially of the liver; for, although there was some bile secreted in the liver, it was a secretion, which did not possess healthy qualities; hence there was a want of healthy and natural stimulus to promote a regular peristaltic motion of the intestines, so that the bowels might evacuate their contents in due season. Nor is this the only important use of the bile.

From experiments it is found to possess powerful antiseptic qualities, it is therefore of the greatest consequence to our health and well being, in order to correct the septic acid in the intestines from which arises most of those distressing pains of the bowels in the colic, dysentery, cholera morbus, and in many other diseases. This septic acid is the natural consequence of the process of digestion of our aliment; hence it is, that in a state of health, that when the stomach is filled with food, it presses the liver and gall bladder, procuring a discharge of both cystic and hepatic bile, to be poured into the duodenum to be

mixed with the digested matter, as well as to flow round it to give the natural stimulus to the bowels and keep up the peristaltic motion of the intestines.

The bile in its healthy state contains a gummy, resinous and bitter substance, together with a saponaceous and alkaline quality, and may be considered as nature's physic. (See Saunders' on the liver.) From these considerations we find the bile of much consequence in the animal economy: therefore, instead of considering it as our enemy, we may think it one of our best friends, without which we cannot possess that most invaluable blessing, health of body. If this doctrine be true, we may perceive the folly of searching the *Materia Medica* for medicines to destroy the bile, since the very diseases these medicines are designed to cure, arise from a want of a sufficient quantity of healthy bile for the purposes above stated.

There is one thing more, however, respecting the use of the bile which is worthy of notice.

The bile in its healthy state and in due quantity, renders the excrements soluble, similar to what we see to be the effect of good yeast mixed with flour and water in the process of making bread: and any person of observation may judge of the healthy state of his liver, and of its secretions and excretions, from this circumstance.

I have for many years been of opinion that the liver, in some way or other, must take the lead of, and govern the rest of the glands, and also the lymphatic system. One reason among many others was, that in cases where mercury was given so as powerfully to excite the salivary glands, yet it did not relieve obstructions of the liver: but on the other hand, where there were obstructions of the liver, accompanied with a torpid state of the glandular system, by removing the obstructions of the liver, the rest of the glandular, and even the lymphatic systems, yielded their consent. This observation then will serve in some measure as a reason for my objecting to producing a salivation in the disease under consideration especially, as well as in all others where there exists any obstruction of the liver: for it is making use of secondary and insufficient means, instead of those which will effect the object at once, not to mention the painful situation a person must be in, to go through a course of salivation, and in many instances its very disagreeable effects.

From the symptoms and facts above enumerated it was evident to me, that there was a torpid state of the liver; hence a deficiency in its secretions and excretions, also attended with some degree of tumefaction, and a want of a sufficient quantity of healthy bile conveyed into the duodenum in order to keep up the peristaltic motion of the intestines, so that the bowels might evacuate their contents in due season.

From hence, therefore, I suppose that a costive habit was necessarily the consequence.

As above stated, when the symptoms required it, I took blood. I then gave calomel ppt: gr. 20 and vitr: cerat: antim: gr. 10, directing my patients to drink freely of thin water-gruel during its operation. These medicines I have been in the habit of using in this manner about fourteen years. I was first led to their use from my own reasoning with respect to their effects when given separately, and from hence I concluded by uniting such valuable medicines much benefit might be derived; the trial has not disappointed my expectation. I know not if any other physicians have made the same trial of these medicines thus united, except a few to whom I have made the communication.

My experience of the efficacy of these medicines, therefore, dictated my using them in this disease.

This dose generally operated freely by puking and also by purging.

The matter thrown off the stomach was green and slimy, resembling frog-spawn at first, but in many instances towards the last of the operation they threw up yellow bile, which I suppose was brought from the liver in the act of puking. For wherever I saw this take place, I found those symptoms of glandular obstruction to give way, and my patients found great relief. The matter also evacuated from the bowels was of a dark bottle green colour, and in some instances almost black.

In many cases where this dose had a thorough effect, so as to discharge yellow bile from the stomach, and also keep up the discharge from the bowels until the appearance of the stools were changed, from a dark green to that of a yellow appearance, one single dose would perform the cure.

This was the case with myself, the dose puked me about twelve times with a great deal of ease, and at last I threw off

yellow bile from my stomach; it then operated as a cathartic sixteen or seventeen times, until the discharge from the bowels also changed to a yellow colour. I then got complete relief and really felt stronger and better able to perform any exercise than I did before I took the medicine, and was able to go out and to attend to my business.

At evening, after giving this dose, I directed my patients to bathe their feet and legs in warm soap-suds, and if any pain in the head, to apply sinapisms to the feet, and drink freely of some cooling drink, as baum tea.

If much fever, I gave powders of sal nitri and tart; antim: every two hours in the above tea.

If the first dose, however, was not thus thorough in its operation, I gave another the next day; and I found by observation, that it was necessary to increase the second dose notwithstanding the first dose had operated considerably freely. For I found more difficulty in procuring a free discharge from the bowels afterwards, in case the first dose did not produce the thorough effect above mentioned; and where this was the case, in consequence of an increased insensibility and want of action in the glandular system, and of the intestines: I gave, as recommended by Dr. Rush in the yellow fever, jalap and calomel gr. ten of each every two hours until a free and thorough discharge was produced, and until there was an evident appearance of yellow bile.

The sooner this could be effected the better, and until this was done, nothing was effected to any purpose.

I have never found any disease, in the course of almost thirty years practice, which required more free and thorough evacuations than this fever.

After this point was gained the fever, with all its symptoms, easily yielded to the common antiphlogistic treatment. Although it continued in many cases more or less until the fourteenth day, at which time a crisis generally took place.

In some cases where there had been the greatest difficulty in procuring a free evacuation from the bowels, at or about the time of the usual crisis a very considerable discharge of blood by stool took place, attended with dysenteric symptoms; this circumstance was alarming to the patient and friends: however, from observation, I was convinced that it proceeded from a

plethoric state of the abdominal viscera, together with a constipated state of the bowels, and from not having been able to procure a thorough discharge soon enough as above hinted. I, therefore, gave laxative medicines and directed the free use of glysters of mutton broth, and flannel cloths wet in brandy applied to the bowels, which soon had the desired effect of giving relief.

After this crisis had taken place, I found one thing worthy of remark, viz. that uniformly patients could take neither the bark nor wine, but received great benefit from weak brandy and water; (the brandy, however, was of the best kind;) and from a decoction of a small yellow root which grows in cold wet land, commonly known by the name of gold thread. This, for several years, I have made use of, and found it a very excellent tonic in many cases. The patients, generally, soon got an appetite for food, and in the course of a few days recovered their strength and spirits; and to use their own words, "much better health than usual."

I have continued this simple mode of treatment through the season to this time, having found no occasion to alter it, being so fortunate as not to have lost a single patient of this disease. The number of cases which has fallen under my care has been seventy-six.

ALBANY, *January 1, 1810.*

AN APPENDIX

To Observations on the Remitting Fever, which prevailed in the city of Albany, in the Summer and Autumn of 1809, with additional observations on the Fever which prevailed in 1812 and 1813, to the present time, May 11, 1813. By Doctor Moses Willard, &c.

[Communicated for the New-England Journal of Medicine, &c.]

In the year 1809, a fever prevailed in the city which was considered a new disease, gave much alarm to the country generally, proved very considerably mortal; various opinions with respect to its nature and the best method of treating it were adopted. It was, however, I believe, generally considered a fever of the typhus kind, but which I considered a remitting fever of an inflammatory diathesis. See my observations on remitting fever

of 1809. This fever continued, more or less, till the end of the year 1810. The year 1811 was remarkably healthy, in this part of the country, and I believe generally. The winter of 1811 and 1812 was very cold and severe, and the last summer was remarkably cool with an unusual quantity of rain, which occasioned the loss of much grain, hay, &c. and did much damage in many places. The disease with which we have been visited, made its appearance the latter part of August last, and has been called by various names by different physicians. After having been in the habit of seeing this disease daily for eight months, (although the number of cases which occurs now is comparatively few to what they were some time past,) I am prepared to call it a remitting fever, and essentially the same disease, as that which prevailed in this city, &c. in the year 1809 : and requires the same mode of treatment, excepting in this disease, I have not found any case that admitted of bleeding. Although from the different season of the year and other circumstances, there has appeared some different symptoms, which I only consider as some luxuriant sprouts from the same prolific root, and that man, who views a puppet exhibition and imagines them living creatures from their appearance, and never looks behind the scene in order to learn the cause of their motion, surely will be the cause of great imposition. I am afraid this is too often the case with physicians with regard to diseases ; and that they have their attention arrested by some prominent symptom which determines their mode of practice, without even looking into, or rightly understanding, the internal state of the body, with reference to its anatomical structure, or the proper uses of the various parts, and, therefore, do not investigate the real nature of diseases. I have reason to believe the predisposition to this disease may exist for a considerable time, although the attacks in some instances are very sudden.

THE SYMPTOMS.

The first thing that strikes the eye of a physician, is a dejected sallow countenance, pulse depressed, small and quick, with a peculiar sensation like the vibration of a cord bound down by transverse ligaments. Tongue furred with a whitish coat, not very dry ; but covered with a viscid slimy matter, pain in the head, and generally a stiffness in the back of the neck, costive habit, frequently more or less pain the side, but not that acute

pain, which indicates active inflammation; with a sense of fullness in the abdomen; shortness of breath if any exercise is attempted, especially in going up stairs, &c. Generally, more or less rigors; a very considerable prostration of strength, and *apparently great debility*: besides many other symptoms, which are so various in different patients, that it would be almost impossible to enumerate them all: but those I have mentioned are the most important and pathognomic. It is matter of much consequence, that we do not confound the usual spontaneous symptoms, with those which arise from improper treatment: for if a physician should see two patients on the fifth or sixth days of the disease, the one treated properly and the other improperly, he would be led to think them affected with very different diseases.

METHOD OF TREATMENT.

As to this, it has been so various in this part of the country, that it would be impossible to give any description of it: for both physicians and people, are all very wise; every one having some special remedy. Among the symptoms mentioned, I said there was *apparently great debility*; this circumstance has been very deceptive, and led to the most fatal mode of practice; by giving large quantities of brandy, laudanum, and other stimulants, &c. by which means many, I believe, have been consigned to an untimely grave. It appears to me, therefore, to be a matter of very great consequence to have a right understanding of this symptom. A healthy well man may be seized by one much stronger than himself, and thrown to the ground, and so confined as to appear to be very weak, and feeble, however, remove his load and oppression, he soon rises with agility and finds himself enjoying his strength as usual; hence it was not positive debility, but a state of oppression. After presuming thus much, let us examine a patient in the most simple state of fever; one who a few hours since was in full health, strength, and activity, but now from the application of cold, we find apparently a considerable degree of prostration of strength, pain in the head, dryness in the mouth and skin; more susceptible than usual of cold, with some chills passing over the surface of the body with an increase of frequency of the pulse, some increase of heat to the touch, although the patient complains of feeling cold.

Notwithstanding these symptoms, the patient's bowels are in a soluble state, and no indication of any particular morbid affection of the internal system. Hence, by taking freely of some warm mild drink and going into a warm bed, perspiration is restored; the mouth becomes moist, the head grows calm and composed; our patient falls into a quiet sleep, awaking in the morning, finding himself in possession of his usual strength and spirits, and is able to pursue his daily labour as before. Now the question will arise, why in this case our patient felt such a degree of debility? He has not laboured unusually hard to exhaust his strength, there has been no depletion, but has had his common support from food, &c. On the other hand, in a few hours time, he is again in the enjoyment of health, strength, and spirits, although he has taken no food or sustenance, except a mild watery drink! Here then, nature has exhibited to us certain phenomena, which, if we can read and understand, we shall have made an important step towards obtaining our object.

The question of the sacred penman may be addressed to us, "Understandest thou what thou readest?" How can we understand, except some one teacheth us? We have a teacher! The unerring voice of nature doth teach us; therefore, let us learn wisdom at her gates. Yes, nature tells us she was oppressed with a temporary load, which she soon threw off, and, therefore, health soon blessed her dwelling! We find that the glands are generally furnished with an artery, vein, secretory, excretory duct, lymphatic duct and nerve; the nerves are the instruments of sensation, and the cause of action in the various parts of the animal body. If the nerves, from any cause, cease to perform these functions in any part, that part becomes torpid and inactive, and, of course, there is an unequal distribution of the animating principle. The action of cold, in a certain degree on the human body, may be stimulant; but in a certain other degree, it proves a powerful sedative; hence then, we may conclude in the case above mentioned, that such was the effect produced upon the subcutaneous and salivary glands; in consequence of which, they were thrown into a torpid and inactive state. But as the nerves, in those parts on which the vital functions depend were in full action, the heart and arteries retained their sensibility; and as the blood is prevented from throwing off its usual excrement by the pores of the skin, &c.

the blood proves a greater irritation to the heart and arteries ; hence the velocity and momentum of the blood is not only increased, and as perspiration is stopped, the blood is not only prevented from freeing itself from an excrementitious matter, but nature is prevented from freeing herself from an accumulated quantity of heat, which would be conducted off by perspiration, water being a good conductor of heat.

The reason why this state of fever is so easily removed, is because that the internal and more important glands were not affected, but continued to perform their healthy functions ; hence the intestines continued their regular peristaltic motion, of course, there was no accumulation of morbid matter in these parts ; therefore, these simple remedies were sufficient to perform the cure.

Health then, essentially depends on the regular and due performance of all the functions of the human body. It then follows, that if the glandular system becomes torpid and inactive and does not perform its regular secretions and excretions, by which means much excrementitious matter is retained in the system, a state of oppression will take place ; which will have the appearance of debility, just in proportion to the state of inaction and torpor induced. I said the disease under consideration, is essentially the same as that which prevailed in this place in 1809. I am, however, very sensible that a superficial observer would be led from the symptoms as I have described them in the fever of 1809, and in the disease now in question, to suppose them to indicate different diseases, whereas, in fact, the only essential difference between the disease of the two years consists in a greater degree of oppression in the disease of this season ; hence we may conclude, that by improper treatment, it would be no difficult matter to run the disease of this season into a typhoid state, which has been frequently done by the free use of brandy, laudanum, and other stimulants, whereas, by a different mode of treatment, this is not the case ; hence I am led to conclude that the cases of typhus which have occurred, have been made so by improper treatment. Here then a question of importance suggests itself to the mind, what is the peculiar state of the system which constitutes a typhoid state of fever ? The liver is the most important gland in the body ; a thorough anatomical and physiological knowledge of which is,

wherefore, of great consequence as it respects the knowledge of diseases; so the due performance of its functions are of the greatest importance as it respects our health. (See observations on remitting fever, &c.; on the liver, &c.) As I consider these observations only a supplement to the pamphlet above alluded to, I shall conclude with some remarks relative to the mode of treatment which I have found successful in every case of this to the present time, without any appearance of a typhus state of fever. In treating this disease, I have found no occasion to alter the mode of treatment from that of 1809, except the omission of bleeding. In this fever I have found a greater degree of oppression; bleeding has not, therefore, been indicated; but in consequence of a greater oppression and torpor of the system, I found it more difficult to procure the necessary evacuation from the primæ viæ, in order to discharge a large quantity of matter from the stomach, and bowels, &c. which is fast approaching towards a septic state. Also to bring the liver into proper action, that it may furnish a due quantity of healthy bile, and to restore the rest of the glandular system to its healthy functions, I have made use of the same medicines for this purpose and in the same manner, as mentioned in the pamphlet of 1809, which see; but made use of larger doses, and repeated daily until the discharge has changed from a black and green appearance, to that of a yellow and natural, evincing the return of an healthy action of the liver, and the rest of the glandular system by the appearance of recent bile; easy perspiration, and a soft state of the skin. When this is effected, the patients immediately rise as from under an unsupportable load, feeling a return of strength, the pulse rises, becomes fuller, stronger, and equal, &c. The sooner, therefore, this be done, the better, in consequence of which, my patients rise from under their load of disease and oppression into a convalescent state, and from thence very soon into a state of health and strength, without the use of any tonic medicines, instead of which, I carefully attend to keep a free evacuation from the bowels until health is established.

It has been supposed an established fact by medical writers, that when a fever is once formed, notwithstanding the cause be removed, yet the fever will run its course or period. This is a point I have been carefully attending to for a number of months

past, and if my experience and observations do not very much deceive me, this doctrine is not true; but on the other hand, the old philosophic maxim is just, viz. remove the cause and the effect will cease. I find by experience and observation, that the mode of treatment mentioned, produces the proper stimulating effects in this *apparent debility*, and relieves the patient, therefore, immediately from his state of oppression; evacuates from the primæ viæ and every part of the system a great, and I may say, a surprising quantity of poisonous matter, which was diffusing through the system its septic qualities, prostrating the faculties of both body and mind. Lastly, it brings the liver and the rest of the glandular system into action, by which the regular secretions and excretions are duly performed; and in fine, every part of the body is brought into healthy action, so that the patient not only has his life prolonged, but is able to enjoy life and its concomitant blessings, in consequence of the re-establishment of a good state of *health*.

I am very sensible that the ideas which I have advanced, are very different from what several gentlemen of this place and elsewhere, have seen proper to publish on this disease: however, I do not think it my duty to contend with others who do not agree with me in opinion. I feel conscious, that I have endeavoured to make truth my guide, and the good of my fellow-men my ultimate object. I have been, for a number of years, endeavouring to investigate a system of medical principles, of which the above observations are but a small part, although containing some ideas which I consider as important as they respect the successful practice of physic in fevers.

ACCOUNT OF THE APPEARANCES, ON THE EXAMINATION OF
ANCIENT DISLOCATIONS OF THE TWO OSSA HUMERI, IN THE
SAME SUBJECT.

By John C. Warren, M. D.

DURING the last winter, I had an opportunity of examining an individual, in whom the os humeri, on each side, had been dislocated a long time previous to death. The external appearance of the shoulders was sufficiently remarkable, to be noticed at first view; the acromion process of the scapula formed a sharp projection, below which was a considerable depression, and the rounded form of the shoulder had disappeared. The head of the os humeri was felt, on one side, behind the great pectoral muscle; on the other, it was most distinguishable in the axilla.

The muscles, which surround the joint, were small and flaccid. The supra-spinatus, infra-spinatus, and especially the subscapularis muscles were very much wasted. Their origins were as usual; their attachments were confounded in a great mass of ligament, which surrounded the head of the os humeri. The long tendinous origin of the biceps was torn through; about an inch of the tendon was observed in one of the joints adhering to its usual place of origin. The inferior portion of this lacerated head was contracted and confounded with the second head of the same muscle. The triangular ligament, which extends from the coracoid to the acromion process, was not ruptured, but had not half its usual size. The capsular ligament was greatly changed in form and consistence. The portion which adheres to the os humeri was excessively thickened, especially at the superior part. Its thickness at some points was not less than half an inch. The augmentation of thickness was evidently produced by a condensation of the surrounding cellular membrane into a compact mass. The insertion of the capsular ligament in the os humeri extended lower on the outside than common; its superior attachment was partly to the external angle of the scapula and the glenoid cavity;

which in a great measure it covered, and partly to the ribs. The latter was an adhesion wholly the result of accident, and, therefore, much weaker and more thin than the other. In truth, the shining fibres of ligament could not be traced in this newly formed part; it consisted of layers of condensed cellular membrane firmly fixed to the ribs.

The interior of the articular cavities was very extensive. That of the left side was about six inches long, and proportionately broad near the head of the os humeri, but narrowed like a funnel toward the ribs. This cavity was partly divided by a ridge of ligament, extending round the middle. Through this contracted part, the head of the os humeri was capable of slipping freely backward and forward. This contraction was unquestionably formed by the fragment of the original capsule, which had been torn through at the time the dislocation happened. This had been kept open by the passage of the bone through it, which must always have taken place, when the head of the os humeri was resting against its bony support, the ribs: but whenever the limb was allowed to gravitate downward, the bone slipped through the opening; never so low, however, that the head of the os humeri returned wholly through the lacerated part into the place of the original cavity. This head rested on the ribs; a thin layer of smooth and shining cellular membrane intervening, covering the ribs and forming the inner coat of the articular cavity. The newly formed part of the capsular ligament of the right side adhered to the first and second ribs, and to the intercostal muscle between; but that of the left side adhered wholly to the second rib; in consequence of this limited adhesion, the articular cavity appeared very narrow toward the rib; if, however, the arm was drawn upward, in the direction of the axis of the os humeri, so as to relax the capsule, the head of the os humeri was capable of pretty extensive motion on the supporting ribs, in consequence of the great extent and the looseness of the new capsule.

The state of the glenoid cavity of the scapula was naturally an object of curiosity. It was sometime before I could ascertain the situation of this part; at last it appeared that nearly two thirds of the cavity were covered by a bundle of ligamentary fibres arising from it, and extending to the os humeri. The insertion of these fibres in the os humeri of the right side was

particularly curious. Nature had here made a powerful effort to assist the imperfect articulation formed upon the ribs, by another between the side of the os humeri and the glenoid cavity. In order to effect this, an imperfect head was formed on the outer and posterior part of the os humeri about an inch below the neck of this bone. The new head was an inch thick at its base, and of an oblong form; it did not project more than half an inch from the side of the bone, and, therefore, reached not the glenoid cavity. To remedy the shortness of this head, a new bone was developed between the side of the os humeri and the glenoid cavity, which bone was an inch and a half long, half an inch wide and thick. It was fixed by very thick, strong ligaments, about half an inch in length, on the one side to the glenoid cavity, and on the other, to the new head of the os humeri. It is probable, that if the patient had lived a number of years longer, the ossification between the side of the os humeri and the new bone would have been completed, and thus a new head would have been formed to correspond with the glenoid cavity, the direction of which would have been nearly at right angles with that of the os humeri.

On both sides, the original articulating surface of the head of the os humeri was changed from the upper and inner part of the bone to the inner part. This change took place, in consequence of the growth of ligament from the upper end of the bone, and the extension of the articulating surface downward. This articulating surface then, instead of presenting an orbicular form, was broad and flat like the back of a watch, in order to correspond with the flat surface of the ribs. The second rib of the right side was somewhat excavated externally and prominent internally toward the thoracic cavity.

The axillary artery was pressed on by the head of the os humeri in such a manner as to interrupt its direct course to the arm, and cause it to form an obtuse angle in passing round the head of the bone. Such a pressure must have interrupted the circulation of blood through the artery, and it appeared in consequence, that the arteries of the arm were generally small; but it did not seem, as I expected, that the subclavian artery above the part subjected to pressure, was larger than common. The axillary vein and the nerves of the brachial plexus were, of course, exposed to pressure, but in a smaller degree than the artery.

Having preserved the two articulations, I allowed one of them to dry in the most natural position, in order to observe the relations of the hard parts, in a more distinct manner. The superior extremity of the os humeri was then on a level with the coracoid process and the upper edge of the first rib; being an inch distant from the former, and an inch and a half from the rib. The head of the os humeri, although dried at some distance from the ribs, was not less than five inches from the glenoid cavity above and within. The head of the bone corresponded principally, on the inside, with the second rib. On the outside with the neck of the coracoid process and the scapula, and above with the clavicle.

This description is taken mostly from the articulation, in which the dislocation was in the axilla. In that, where the head of the bone was under the pectoral muscle, the capsular ligament was attached to the second rib farther forward than in the other case. This was the most remarkable peculiarity, dependent on the difference in the nature of the two dislocations.

Many years must have been required to produce these changes; but I was not able to ascertain how long a time had elapsed between the occurrence of the dislocations and the death of the patient.

The subject of these observations was about 80 years of age, of a robust form. Some other morbid appearances presented themselves on the examination of the body, which, although not apparently connected with the accidents, described above, it would not be proper to pass over.

As there was some reason to suppose an organic disease of the heart, this organ was carefully examined. The heart was enlarged, though not greatly; the arch of the aorta was dilated enormously, possessing about four times its usual capacity. The cause of this dilatation was discovered, on tracing the abdominal aorta: for this vessel was converted into a bony tube, through the whole extent of the abdomen. Other arteries were much ossified. The lungs on the right side were hard and full of blood, and exactly adherent to the parietes of the thorax in every part. These organs being turned over, a hard mass was discovered fixed to the posterior part of the bifurcation of the bronchiæ. This osseous mass pressed on and nearly inclosed the left bronchia, whence might arise the patient's

difficulty of breathing. It also pressed on, nearly enclosed and was intimately united with the nerve par vagum of the left side, in such a manner, as would lead to the opinion, that the function of this nerve must have been wholly interrupted.

The aorta being removed from the vertebræ, a considerable distortion of the spine appeared, together with a great enlargement and deformity of the lumbar vertebræ. These bones were also covered with excrescences of bony fungus. The bones, constituting the knee joint, exhibited instances of a similar fungus in a more remarkable degree. The inferior extremities of the ossa femoris were greatly enlarged, and when cleared of the soft parts, exhibited the appearance of a cauliflower. There was no ulceration in this or the other parts where these excrescences existed.

This patient had an inguinal hernia of the right side, which being carefully examined, presented an instance of that peculiarity in which the passage of the hernia, instead of extending an inch and a half obliquely upward and outward, opened into the abdominal cavities directly opposite the ring. Mr. Cooper has stated the course of the epigastric artery in such cases to be on the outside of the mouth of the sac. So it was in this instance. The artery, instead of passing under the mouth of the sac and rising on its inner side, came just to the outer side of the hernial orifice, then passing upward and inward, inclined over the mouth of the sac. An incision from the sac outward would probably have divided it, and an incision upward would have endangered the same accident in this instance.

If to these observations we add that one eye had perished, and that the cristalline lens was found petrified in the midst of its disorganized coats, we shall have stated the principal morbid appearances in this subject.

It is natural to inquire what kind of death this man died, and I therefore obtained the following minutes made by the physician, who attended him. Nothing additional to this could be readily procured.

October 29, 1813. Sulp. Sodæ unc i. et pil. scil comp. at night.

November 14th. Dyspnæa so urgent, as to oblige him to sit up most of the night—expectoration thick and hard—pain and dyspnæa somewhat relieved by vesication, bowels regular since the sulphate. pulse 66 rather feeble. Artery partially ossified—pil. scil comp.

18th. Hard tumor discoverable in region of the liver, across the epigastrium and just below the cartilages of the short ribs. Refers all his distress to this part. Unable to lie down in consequence of distress and dyspnæa—Not without appetite—Chronic cough, rattling—Chest resounds but not perfectly clear—R. pil. scil et subm. hydrarg. omni nocte:—till the system is affected.

20th. Costive—Sulph. Soda unc i.

23d. Continue the pills.

26th. Dyspnæa diminished, able to lie down at times—Spitting without soreness of mouth.

29th. Pulse 80, intermitting and very irregular. Dyspnæa severe at times.

Dec. 2d. Chest sounds somewhat dull on the right side of the sternum—Also on the right side of the vertebræ, better under the arm.

6th. Cough he says is somewhat alleviated.

12th. Complains of the dyspnæa—Pains alleviated—Pulse 64, irregular.

14th. P. 44 to 48 very irregular—only complains of a stoppage in breathing, which he refers to the right side.

18th. Cough not so urgent—Sleeps better—Continue the medicines.

28th. Strength diminished—Cough and pain somewhat alleviated—One gill of wine.

30th. Died last evening.

The circumstances most remarkable in these dislocations are the following.—The formation of a new socket for the head of the os humeri on the sides of the ribs, to which the head of that bone had become accommodated in form and situation. The enclosure of this socket by a new capsule composed of condensed cellular membrane, on the inside of which a synovial membrane was developed. The great extent of this new cavity, calculated to remedy the inconvenience of its situation. The guards, which nature had placed, against a new dislocation, by thickening the remains of the original capsular ligament, wherever it could be done with advantage to the strength of the articulation. The evident appearances, in one of the articulations, of the hole in the original ligament, through which the head of the os humeri had been dislocated. The glenoid cavity,

partly covered by ligament and altered in its form. Lastly, the effort of nature to form a new articulating head on the side of the os humeri.

REMARKS ON ERGOT.

COMMUNICATED IN A LETTER TO ONE OF THE EDITORS.

HAVING received by the post a Dissertation on the *Ergot*, I take the liberty of making my compliments through you, to the author, for this judicious and respectable performance. I presume also to add a remark or two on the subject of it.

The author says, that the quarter of France in which the *Ergot* is principally found, is the "province of Salonia; and Salonia he afterwards called Sologne. (See p. 3 and 5.) Now the portion of the country known by the name of Sologne was included before the French revolution in the *province* of Orleans; and according to M. D'Anville's map of France, it lies south of the great arch of the Loire. Sologne however being the mere name of a section of France under some of its old forms of division, and not the name of a town; it is not to be seen in every map, and is wanting even in the maps of Sanson. I do not find it in D'Anville's map of antient Gaul by the name Salonia, nor yet in his work on antient geography; but Busching says, that Sologne was "in Latin, Secalaunia or Segalonia; a country, the boundaries and appurtenances of which are not easily determined:" and this account may have been true in the decline of the Roman Empire, or in the middle ages.— But I dwell too long on *names*, and must proceed to *things*.

Among the various accounts given in the memoirs of the French Academy of Sciences, I find one (in the *Historical* part of the volume for the year 1710, p. 61,) from which I translate several extracts.

Speaking of the dry gangrene (as it has sometimes been called,) produced by eating the Ergot in the form of bread; the Historian says, "what was particularly astonishing was, that this disease in no degree affected *women*; though it occasionally attacked a few little girls." Will it not then be remarkable, if the ergot should be found to confine its effects to the form of dry gangrene, in the case of the male part of our race,

and of little girls : and only act upon other females where there is an adult and distended uterus, to which in this case its operations are said to be wholly limited.

Again, says the Historian, "the disease is called Ergot from its resembling the *spur of a Cock*," (called in French *Ergot*.) And in fact this appears to be often true, if we look at the plate annexed to the above dissertation, taken from Tessier. (See figure 3, and its appendages D and E.)

A third passage from the Secretary of the French Academy is this : "As soon as the peasants eat this mischievous bread, they feel themselves *almost* intoxicated : after which often follows the gangrene." This feeling, approaching to intoxication, is not noticed in the dissertation. It could scarcely indeed have come within the *personal* observation of the author ; as he probably has never seen many persons who have eaten much rye-bread mixed with Ergot, in its new state in autumn.

With respect to the causes of the size and qualities of the *Ergot*, the following conjecture of M. Fagon, the noted physician of Louis XIV. (as recorded by the above Secretary,) may be added to the three other conjectures enumerated in the 5th page of the dissertation.

"There are mists (he says) which spoil the wheat ; from which the chief of the rye escapes by means of its beard. But in those cases where the rye suffers also, this poisonous moisture rots the skin which covers the grain ; renders it black ; and even alters the substance of the grain itself. The juices of the plant now flow towards the kernel in greater abundance ; and collecting themselves into irregular masses, a sort of monster is formed. The new production acquires noxious qualities, because it is a compound of this superfluous sap with a morbid humidity." I pretend not to adopt this conjecture, for I do not fully understand it ; but I think it right to state it.

As to the other means of forwarding *delivery*, lately adopted in the American practice of midwifery, namely the use of the lancet ; it is an *old expedient*, which has of late been revived and extended ; and which analogy might have suggested, as well as accident. But in the employment of ergot for the same object, the whole must have arisen from casual observation ; and in this case we may suspect that the discovery originated

among the French, to whom nevertheless I do not hear that it is now attributed.*

I am, with high esteem, dear Sir, your's sincerely.

ON MERCURIAL ULCERATIONS.

COMMUNICATED IN A LETTER TO ONE OF THE EDITORS.

[For the New-England Journal of Medicine, &c.]

THE method of discriminating those diseases which resemble, in appearance, the *lues venerea*, so well explained by Mr. Abernethy, has not, I imagine, been generally known in our country. At least I have had much reason to fear so, from the practice of some physicians. Whenever those organs have been affected, which are usually the seats of syphilitic complaints, mercury is the first and only auxiliary of the practitioner. The poor patient is mercurialized and salivated at successive periods, and when his complaints get worse under such treatment, they are thought to require reiterated and more violent salivations. Salivation is made to succeed salivation, till the enormous extension of the ulcers, the copious flow of saliva, repeated diarrhœas, bleedings from the gums, and swellings of the throat that threaten suffocation, combine their aid to destroy the unfortunate victim. Mr. R—— applied to me for advice, at some time in the year 1812, being affected with an extensive ulceration on the glans, and another which covered the greater part of the soft palate and the roof of the mouth. He gave the following history of his case:—Seven or eight months previous to that time, he had been affected with a chancre, which made its appearance a few days after he had been at sea, on a voyage to Europe. Being prepared for the occurrence, he began to take mercury; but the quantity was not sufficient to produce

* But wherever these two discoveries have arisen, the knowledge of them is peculiarly important in a country where child bearing is so common; and where notwithstanding the usual good health of the people, pain and the hazard to a double life often require that the operations of nature should be assisted.

salivation, and in a short time he perceived a swelling in the groin, which proved to be a bubo and suppurated. After a five weeks' voyage he landed in Europe, and immediately began a regular course of mercury, which soon caused a rapid amendment in his sores. Before the cure was completed, he was unluckily compelled to go to sea again; here he continued the use of mercury, though not so regularly as had been enjoined, so that his sores increased, and he perceived an ulceration on one side of the soft palate. When this voyage was completed, he was so thoroughly alarmed, that he resolved to devote himself to the cure of his disease. In the space of five or six weeks, the ulcers were all healed: though not till a deep indentation had been made on the glans, and an inequality in the throat, which caused some uneasiness. He remained perfectly well, long enough to satisfy his surgeon and himself, that the disease was eradicated. After some time, he sailed on his return to this country, and in a few days observed an ulceration on the glans, at the part formerly affected. This appearance surprised and alarmed him extremely, as he had never been exposed to infection after the first disease. Mercury was immediately resorted to, and this time he used it so effectually as to produce thorough salivation. He was greatly disappointed, however, on observing that his sore did not improve, and that his throat was ulcerating. The mercurial medicines were continued so as to keep him salivated in a moderate degree during five weeks; the sores were sometimes a little better, but on the whole they increased greatly, till the termination of his voyage, when he came under my care.

At this time there appeared an extensive ulceration of the throat, covering the whole of the palate and extending to the posterior part of the pharynx. The ulcer was of a yellowish white colour, not very deep, and its edges soft and not well defined. It had, for a few days, increased with great rapidity.

On examining this ulcer I was satisfied from its superficial appearance and rapid extent, that it did not possess a syphilitic character. The history of the symptoms confirmed me in this opinion; for it appeared less probable, that the long continued use of mercury had not eradicated the original disease, than that the copious use of this medicine had weakened the ulcerated parts, so as to admit of their falling into a state of disease, on

the slightest irritation. I endeavoured to explain this to the patient, as satisfactorily as possible, principally with a view of convincing him, that he had no remnant of syphilitic disease. He was directed to take Peruvian bark in substance, and in as large doses as could be employed. He had also a very weak mixture of muriatic acid with water, which, however, he could not take at first, but afterwards bore very well.

During the three first days of the treatment, no favourable change took place in the appearance of the ulcers; on the contrary, his appetite and strength lessened, his tongue became very foul, and the disease extended. I then directed an emetic; from the operation of which, he suffered severely. The treatment was immediately resumed with vigour; he was directed a cordial diet, and the moderate use of wine, especially the red astringent wines. In two days after this, the amendment in the state of the ulcers was remarkable. The whitish semi-purulent mucus which covered the palate was cast off, a red and healthy surface appeared under it, and the disposition to heal was sufficiently evident in the edges. In a week, the greater part of the ulcer was healed, and the remaining portion soon after. His appetite and strength were also perfectly restored.

Hardly were the injuries healed, than this patient thought proper to indulge himself in a debauch of wine, the consequence of which was the reappearance of the ulceration in the mouth, two days after. Being again called to visit him, I repeated the course previously adopted with equal success. After which I did not again see him.

A few months after, I was informed that his mouth had again become sore, and that he had consulted two respectable physicians, who pronounced the disease to be syphilitic and directed a full course of mercury. No sooner was he affected by this medicine, than the ulcerations became more formidable than ever. A profuse discharge of foul matter was poured out from them, and the physicians thought it necessary to use mercury with more vigour, which was accordingly done. Notwithstanding this, the disease daily became more alarming; the patient wholly lost his appetite; a hectic fever appeared; his strength gradually wasted away, and in a few months he died in a dreadful state of disease.

It is hardly necessary to remark, that the result of this case proves the complaint not to have been syphilitic. It must be considered as a disease caused by mercury, and that this medicine was the most improper, that could be employed for its cure.

CASE OF A BOY WHO SWALLOWED A PIECE OF COPPER.

BY JAMES JACKSON, M. D.

ON October, 1813, G. B. a boy in his fourth year, swallowed a half cent. There ensued almost immediately a nausea and a great flow of saliva from the mouth. Within twenty-four hours the patient began to vomit. He continued to vomit at intervals for eight days; and at sometimes it was almost incessant for hours, and in the highest degree distressing. He threw off his victuals and some bile; but much of the time, he was troubled with vain retchings. About the fifth day, he had three very offensive and copious stools, which were uncommonly green. He derived some relief from these evacuations. He often complained of pain in the abdomen, which seemed to be in the umbilical region.

The first solid food which he retained was in the night of the eighth day. He then awoke and called for brown bread; and he continued to demand this, with great vehemence, until he had eaten three large slices. He retained them all, and from that time was convalescent. For several weeks he experienced nausea whenever he attempted to swallow animal food, although he chewed it abundantly. His health has, since that time, been perfectly restored.

At first he did not take any medicine, but when the symptoms became very distressing, I was induced to attempt giving relief. Two remedies evidently benefited him; the one consisted in hot fomentations to the epigastrium; the other was magnesia administered internally.

It seemed evident in this case, that the copper was undergoing solution in the stomach. This does not always take place where pieces of copper are swallowed. That it was taking

place in this instance seemed evident by the nausea and vomiting; and afterwards by the relief obtained, while the piece of coin was not discharged in its solid state.

I had two views in directing the use of the magnesia. One was to lessen the acid in the stomach, so as to make the solution go on more slowly, and thus prevent the stomach from being charged at any time with so large a dose of the offensive salt which resulted from the solution as it would otherwise have. The other was to promote the peristaltic motion, and thus carry off the cause of offence as fast as it was formed. The magnesia was, therefore, given as freely as possible. The benefit seemed to me unequivocal.

March, 1814.



COLLECTIONS OF OBSERVATIONS IN MORBID ANATOMY—No. IV.

INFLAMMATION IN THE MUCOUS MEMBRANE OF THE ALIMENTARY CANAL, OCCASIONING OBSTINATE DIARRHOEA.

BY JAMES JACKSON, M. D.

R. G. ESQUIRE, a gentleman under thirty, of sanguine temperaments, but with a constitution not firm, travelled in the summer of 1813 to Fort George, thence across the country to Albany, and from there to Boston. He began to be sick at Fort George, and from that time was occasionally troubled with diarrhoea and with some other symptoms of indisposition. He was not, however, much delayed in his journey by these complaints. He grew more sick, so that some days before he reached Boston he was obliged to go to bed in the day time, and at Northampton he took some rhubarb. Yet he was not prevented from riding every day, nor even from exerting himself in visiting whatever seemed worthy his observation on the road. He arrived in Boston on the 15th of September, and the next day I visited him, and found him confined to his bed.

At this time his symptoms were headach, pains in the neck and back, muscular debility, pulse rather tense and more than a

100, tongue dry and a little coated, appetite diminished, and thirst. The diarrhœa had ceased since taking the rhubarb about three or four days before. He now got a pill of submuriate of quicksilver, and this was followed by a saline cathartic. The operation was kind; and at night he had a small dose of opium with an antimonial. The next day, (17th,) the pains were gone and he seemed better, but toward night the diarrhœa came on. The patient stated that he was prone to this affection, and that he had once been greatly reduced by it. From this time the diarrhœa continued until his death. At first the evacuations were frequent, but after two or three days they were not more than three or four in twenty-four hours. In quantity they varied from one gill to three. They consisted of a light yellow fluid, thin, but not watery; and had light portions of fœcal matter floating in them. These evacuations took place without pain; and at other times also, the patient declared himself free from pain, except very rarely he complained of a momentary uneasiness from flatulence. He was, likewise, free from nausea, except once when it was attempted to give him ipecacuanha in small doses, combined with other articles. The tongue was very dry, but not coated after the first day or two until the last three days. The thirst was, at all times, very great. There was not any time when the appetite was wholly lost; or at least the patient was always ready to take food. The muscular strength was great from after the first day or two until near the close of the disease. Until within thirty-six hours of his decease, the patient could walk about his room perfectly well. The pulse were mostly at 100 previous to the last three days. When they grew more frequent, they also grew weaker; but at the same time the tongue grew more moist and natural, the desire for food increased, he began to take freely of strong beef tea, which suited him very well, and the sensations about his stomach were, as he repeatedly and emphatically stated, precisely those of health.

The remedies employed were opiates, antacids, astringents and tonics, with warm bathing and friction. These remedies did not produce the desired effect; yet the general strength of the patient was preserved, and the disease seemed to be controlled, though not conquered.

The termination of the disease and of life was preceded by symptoms of great violence. These were three stools, amounting to nearly or quite two pints, consisting almost entirely of blood. With these the patient immediately began to sink, and he died in thirty-six hours after the first of these discharges, and about twenty-four hours after the last of them. Before death he had a large alvine discharge, in which there was extremely little blood. Death took place on the 28th of September.

EXAMINATION OF THE BODY.

The abdomen only was opened. On viewing the viscera of this cavity *in situ naturali*, the following circumstances were noticed. The omentum was very red, but entirely without effusion of any kind either within or upon its coats. The small intestines generally were of a light red colour; apparently from a fulness of the extreme vessels immediately under the peritoneal coat. That coat itself was natural, having its usual colour and polish. The gall-bladder was very full, and in shape something different from usual; looking like a portion of small intestine when distended. Its duct, as well as those connected with it was pervious, and its contents were natural. The liver, spleen and pancreas appeared, in all respects, healthy.

The alimentary canal was laid open through its whole extent, excepting the gullet. Its contents were not unnatural. They were not offensive in smell. In the stomach they consisted of the fluids recently swallowed. In the small intestines they were of the usual consistence, generally of a light yellow colour, but in one part a little green. The quantity in the small intestines was very considerable. The large intestines were proportionally more empty, and their contents were more fluid and of a more brown colour.

On the internal surface of the stomach and bowels, there were very strong marks of disease. These were seen in the stomach from the cardiac orifice over every part of that organ to about its middle, and in the first part of the duodenum; and more slightly in many parts of the small intestines. The disease was again strongly marked in the ileum, in the four inches of its lower part; in the valve of the colon, and in the first and last parts of the colon; but not in its arch, nor in the rectum.

These marks of disease consisted, for the most part, in a great discolouration; the colour being in some parts of a dark red, and in others quite purple. There was not any swelling, nor any loss of polish in the mucous membrane of the parts discoloured, with the exceptions which follow. In the ileum, at its termination, and in the valve, the mucous membrane was considerably thickened, the surface was rough and was covered with adhesive mucus. In the large intestines there were, in addition, many small ulcerations; and in some parts, particularly in the rectum, there were many small white points, which were evidently elevated and had the appearance of very minute pimples. The mucous membrane was not thickened in any part of the large intestines, except the slight swelling and induration at the margin of the little ulcers. These margins were of a bright red colour, while that of the ulcerated surfaces was white or cineritious.

REFLECTIONS.

The mode in which this case terminated, and the appearances after death, were not such as the symptoms previous to the last days authorized us to expect. One conversant with pathological anatomy, in reading the examination of the body without having read the history of the disease, would say, that in this case there must have existed the symptoms of dysentery, accompanied by nausea and vomiting. Especially it would seem to such an one, that there must have been a difficulty in transmitting the contents of the small intestines through the valve of the colon into the large intestines; and that hence the stools must have been small and preceded by pain. As this was a case which I watched with peculiar assiduity, I knew that the symptoms above mentioned did not occur. I saw almost every discharge from the bowels after the patient came under my care. In a single instance, previous to the last two days, there was a very small portion of bloody mucus; and this seemed evidently connected with an irritation just at the *sphincter ani* brought in by the frequent dejections.

For the absence of nausea and vomiting, and of distress at the stomach, I cannot suggest any cause. There certainly did not seem to be any diminution of either sensibility or irritability during the disease. It is remarkable, that even the appetite

was not lost, and that such food as the patient took seemed to undergo digestion. How account for the absence of dysenteric symptoms? The only difference in the morbid appearances of the large intestines in this case from those commonly seen in dysentery are these:—In dysentery the mucous membrane of the large intestines in some part, and likewise in some cases that of the small intestines, is found not only changed in colour, but also swollen and covered more or less thickly with adhesive mucus. In this case, except on the termination of the ileum and on the valve of the colon, the state of this membrane was quite different. Though greatly discoloured it was rather unusually smooth and polished, exhibiting an appearance of almost præternatural cleanness.

Whence came the sudden and profuse discharge of blood? No doubt from the exhalants of the large intestines. The intestines were carefully examined and there was nothing to justify a suspicion of the rupture of any vessel. It is remarkable that there was not in the cavity of the intestines after death the slightest particle of blood, nor of bloody fluid.

Case of inflammation in the mucous membrane of the alimentary canal and of malformation of the heart.

BY JAMES JACKSON, M. D.

THE daughter of R. H. died in Sept. 1813, in her third year. She had been sick five days. Her symptoms were at first vomiting and purging. The vomiting ceased after the use of some remedies, but the purging continued. The stools were exceedingly black and glutinous. They were also very numerous and not inconsiderable in quantity. At the last they became less frequent and changed in colour to green. The child did not suffer much pain. The pulse were greatly accelerated in the beginning and the skin was very hot. She lay quiet through most of the disease, and was even disposed to stupor. Meanwhile the countenance was not very morbid and was of a good colour.

The respiration was most uncommonly accelerated and with peculiar irregularity, as if from being hurried, especially when

the pulse were most frequent. The action of the heart was rapid, troubled, and confused. The unusual palpitation of the heart had long and often been noticed by those about the child, as likewise the shortness and rapidity of respiration. It had been particularly observed that this rapidity of respiration was much increased by exercise. The child always manifested an unwillingness to go up stairs, always went up very slowly and often begged to be carried up. She had never been subject to such paroxysms of dyspnæa as seemed to those about her to constitute disease; and it was not remembered that her countenance or extremities had ever been livid, or even otherwise than fair and florid. Accordingly medical advice had never been asked in respect to the palpitation and dyspnæa.

The change from life to death was rather sudden.

The cavities of the thorax and abdomen were examined after death and the following appearances were noticed.

The abdomen was first examined. The viscera did not present any external appearances which are very unusual. The small intestines were however more red than usual, but the peritonæum was sound.

The stomach and intestines were laid open. The stomach had its mucous membrane of a bright red colour and swelled in every part. This organ was much contracted and contained a small quantity of thin bloody mucous smeared over its whole surface. The small intestines were inflamed in many places more slightly than the stomach. The valve of the colon was considerably inflamed and so was the mucous membrane of the large intestines through their whole extent. This membrane was not only red; it was also swollen and its surface was rough. It was every where covered with an adhesive mucus. The contents of the intestines were various in colour and considerable in quantity. In one part of the small intestines the colour was yellow, in another part it was green, and in another and this through a considerable portion it was almost precisely that of wet clay. It was however remarkable that these contents were not, in any part, of the dark black colour which had been seen in so many of the stools. This colour had probably been derived from a mixture of the bilious stools with blood poured out from the mucous membrane of the large intestines, and this had ceased before death, so that the last stools were green as has been mentioned.

The thorax was next examined. The lungs were natural. The heart was uncommonly large. The pericardium was healthy in its appearance, but contained in its cavity more fluid than usual. The auricles were very greatly distended. The great arteries were considerably different from what is common. The pulmonary artery was by much the largest and most prominent. It formed a small arch which made it appear like the aorta. It divided into two branches immediately as it began to descend after having made its curvature. Of these branches that to the left side was the largest. They went to the lungs as usual; but from the left branch went off a small vessel to the left subclavian. The aorta rose almost perpendicularly from the heart, passing on the right of the arch of the pulmonary artery; and after rising rather more than two inches it divided into two branches, which immediately subdivided into the carotids and subclavians. When the heart was laid open it was found that the *foramen ovale* had not closed and that there was *an opening between the two ventricles* large enough to allow a finger to pass through it. All the cavities contained coagulated blood, and this was very dark coloured in them all.

In this as well as the preceeding case symptoms of dysentery were wanting, although the mucous membrane of the large intestines was in a state of inflammation. But here there was probably blood effused as has been suggested; and if the patient had lived longer the symptoms would have become more truly dysenteric. Death was no doubt accelerated by the malformation of the heart. This had not occasioned any very great difficulty in carrying on the ordinary functions in health and it is remarkable that it had not; but when a disease occurred, under which the circulation was quickened, the embarrassment produced in the functions of the heart was such as to occasion great difficulty in all the other functions.

Scirrosity of the Uterus.

BY THOMAS SEWALL, M. D.

IN the spring of 1808, I was called to attend the dissection of the extraordinary case of diseased uterus in Miss M. a young woman aged about twenty. She was below the middling sta-

ture, rather slender but had generally enjoyed a tolerable state of health. The history of her singular case is as follows. About eighteen months before her decease she experienced a sudden cessation of the menses, and acknowledged herself guilty of an act of illicit connexion with the other sex, from this she supposed conception had taken place and accordingly made an avouch before a justice of the peace. From the first ceasing of the menses there was a gradual and uniform enlargement of the abdomen and breasts, and the first eight months were marked by most of the circumstances usual in an ordinary case of gestation. At the end of nine months she supposed herself ill, called in a physician, who on examination discovered no symptoms of labour and left her. From this time the enlargement of the abdomen was more rapid and the breasts became hard and inelastic. At the end of nine months more she expired, apparently from the great distention of the abdomen and extreme emaciation.

Two days after death the body was inspected in presence of a large number of medical gentlemen.

The superficial veins of the abdomen had become varicose to a considerable extent. On laying open the abdomen the uterus was found occupying nearly its whole cavity, with its surface irregular and adhering in many points to the peritoneum. This when dissected out weighed thirty-two pounds and an half. On examining its internal structure there were found two cavities, one the natural cavity of the uterus whose surface was tolerably smooth and regular containing a dark grumous fluid to the amount of a number of pounds, the other senum and pus. These were evacuated and the uterus weighed twenty-one pounds. The *os tinæ* had adhered and the ovaria were enveloped in the diseased mass.

In cutting into the substance of the uterus it exhibited generally a whitish color, a very firm unyielding texture intersected by membranous septa. Some points were cartilaginous and others approaching to the state of bone. The intestines were crowded back on the spine and some of the mesenteric glands enlarged to the size of grapes and in a state of induration. The other abdominal viscera were in a healthy state.

It may be regarded as a remarkable fact that during the whole course of this disease the appetite was unusually voracious.

cious, craving constantly animal food which was taken and perfectly digested, the bowels were most of the time firm and regular.

The above case occurred in Kennebeck, Me. It has I believe never been given to the public. If you think it worthy of notice you may insert it in the Journal. If not, will you have the goodness to return it by mail.

With much respect and esteem, I am your obedient Servant.

THOMAS SEWALL.

JOHN C. WARREN, M. D.

Boston.

Ovarian Dropsy.

MISS A. P. at the age of fourteen, of a healthy constitution and comely features, was attacked with severe pains in the right hypogastric region, accompanied with such symptoms, that the attending physician and others in consultation did not hesitate to pronounce her pregnant. Her stomach and habit of body were generally good, though at times deranged, apparently from the severity of the symptoms. In a short time the abdomen became enlarged and lower part of the thorax much distended. Superior extremities much emaciated, inferior œdematous. The abdomen became exceeding hard and tense. She continued with progressive enlargement till four or five days previous to dissolution: When loss of appetite, and a laborious and difficult respiration commenced and death closed the scene.

On the second day permission was obtained to examine the body. After an incision into the abdomen, there flowed out at least sixty pounds of clear fluid. On further dissection adhesions of the peritoneum were discovered to a substance filling almost the whole cavity of the abdomen. This preternatural substance extended from the pelvis to the scrobiculus cordis pressing the liver and stomach against the diaphragm, and that muscle was forced into the thoracic region so as to lessen its natural space. There were many adhesions of the omentum and intestines to this substance. The uterus was in a healthy state, with the left fallopian tube, and ovarium perfect. The right fallopian tube was distinct and healthy near the

uterus ; but was soon lost in this enormous formation, which when separated from the body was found by accurate weight to be fifty-two pounds. Its removal exposed an enlargement of the mesenteric glands, and considerable inflammation of the intestines. This body on dissection was found to be composed of a very great number and variety of cysts, laterally attached to each other. These cysts varied in size, some were not larger than a hazel nut, others as large as an orange. Their coats, in some parts thick approaching to scirrhus in others very thin and soft. On opening these sacs, there was exhibited almost as great a variety of fluid, as numbers of cysts, some contained aqueous and thin, others slimy fluids some yellow and green, and others well digested pus.

The diaphragm was uncommonly thick and rough. On inspecting the thorax we found the pleura contracted and the left lobe of the lungs reduced to about one third of, and the right to about two thirds of its usual size. Neither of which was otherwise diseased.

The heart and its appendages were healthy. There were judged to be about eight pounds of water in the chest.

HINTS RESPECTING THE DISEASE COMMONLY CALLED "SPOTTED FEVER,"*

NOW RAGING IN KENNEBECK, IN THE DISTRICT OF MAINE.

THE calamities attending the visitations of this disease in different parts of our Northern States, have by no means principally arisen from a want of skill as to diseases in general, in our medical practitioners ; but from deficiencies in the medical works which those gentlemen have consulted ; as those of Cullen, Fordyce, Darwin, Townsend, Underwood, Thomas, Wilson, and Rush ; which are nevertheless works of the very first value and reputation. The distemper in question has only occasionally appeared in any place ; and the description of it being often con-

* This paper may be considered as concluding the observations on Spotted Fever in the first volume of the Journal, together with additional observations on the epidemic actually prevailing.

fused and its treatment generally mistaken, systematic writers could offer to others no better information, than they had received themselves on the subject in question.

Considerable misapprehension indeed has arisen from the very name of "spotted fever:" for though the word *spotted* is a fair equivalent of the word *petechial*, which learned men frequently apply to this class of fevers; yet spots of a nature to ATTRACT NOTICE are often wanting in FIVE CASES OUT OF SIX; and sometimes in a larger proportion. Hence, well informed practitioners of all descriptions are dissatisfied with the name; which ought to be considered not as denoting spots, but only as implying a tendency to spots.

But after overcoming the difficulties arising from a deceitful name, our physicians have still to encounter the yet greater difficulties of a deceitful disease; for as the disease often counterfeits various others, the practitioner is often surprised at seeing death, where he had not been taught even to suspect danger. Dr. Elisha North, who has assembled the opinions of many of our northern physicians respecting this disease, assures us (p. 20) that it may easily be mistaken for at least *fourteen* others; a fact, which all attentive observers skilled in the subject, more or less confirm. Dr. North's list of these fourteen diseases is as follows: viz. ulcerated sore throat, scarlet fever, common typhus, rheumatism, dropsy in the brain, worms, cholera morbus,* hysterical complaints, madness, inflammation of the brain and of its membranes, apoplexy, palsy, nettle rash, and cholic; and he closes this enumeration with an *et cætera*, (&c.) as if his catalogue were yet imperfect.

We shall accordingly increase his list with several other articles; as pleurisy, and other diseases of the chest, nervous head-ach, palpitation of the heart, ear-ach sometimes followed by discharges from the ear, lethargy, stretched and shining skin as in dropsy, and stiffened muscles.—This disease has also a mode of attack which sometimes resembles that in epilepsy; that is to say, pain or a singular sensation commences in some extreme part of the body, and travels thence in a straight course towards the head.† Some practitioners may be inclined to add to the above enumeration of counterfeited diseases, what is called pu-

* That is, an union of vomiting and purging; which in this disease chiefly occurs with children.

† In epilepsy, this is called the *aura epileptica*, or *epileptic blast*.

trid fever ; or else a reputed mortification under some particular form ; but the writer of these hints has no observations to offer on this head.

This disease derives farther variations, not only from place and from season, but from the patient whom it attacks, as well as from the treatment which is applied to it.

Nor does the embarrassment of the practitioner always terminate even here ; for when he looks into this disease for *fever* (according to the usual meaning of that term,) he frequently finds no indication of fever, either in the pulse, or in the bodily heat of the patient.

Various American writers also on the subject of what is called spotted fever, at one time seemed to consider *aged* persons as excluded from any share in the disease ; though later publications admit [what is true in fact,] that *all ages* are open to its attacks. Misled however by what was at first advanced on this subject, several gentlemen otherwise well skilled in their profession, have treated elderly patients seized with our disease, as if they were seized with one of those other diseases, of which our distemper at times wears the mask ; and conducting the treatment of the sick party upon this plan, they have used various evacuants ; commonly to the great distress of old people, especially in severe cold weather.

Such complicated sources of deception will readily explain the cause of the frequent mortality which has attended this disease, even under those who have been in esteem as good practitioners ; especially when the disease has first appeared within their particular circle of observation. Other persons of inferior experience, imposed upon by such embarrassments, commonly follow the example of practice thus set them by persons of reputation. In both cases, the deaths which occur, are attributed solely to the virulence of the disease ; without any suspicion that there is error in the treatment.

In doing this justice to various medical gentlemen of candor and merit, me must not forget the praise due to two other classes of persons. 1st. We have to admire the courage and address of those practitioners in New-England, who with little or no aid probably from books, have (as it were in a moment) given us an almost entire safeguard from mortality in this disease ; at least *as it shews itself in inland places in winter*. They have, in a manner, turned death into life, and despair into confidence,

wherever they have been allowed to exert their labours or to communicate their advice. This great discovery, now well established by the evidence of many thousand cases, will spread itself far and wide, and will stand the test of time, to the great credit of its authors; for though different European writers were to a certain degree acquainted with the methods employed here, yet they have few opportunities of employing them in cases like ours, in consequence of their having seldom seen the disease in the same severity. 2d. The other class of persons deserving some approbation on this occasion, is to be found in those practitioners, who have studied the works of the inventors of this discovery, and faithfully pursued their rules. Some improvements have been requisite, but they are comparatively few; and indeed it is necessary to *try* to do better than *well*, at the hazard of a patient's life, in a disease so very critical as the present.

It is now necessary to point out the books containing the very important discovery here referred to. They are, 1. The short Inaugural Dissertation of Dr. Nathan Strong, Jun. on the Disease "*called* spotted fever." 2. The little cheap volume published by Dr. Elisha North on the same subject; which though it in part contains the opinions of persons less informed than himself, yet presents throughout various materials worthy of attention; some being indeed of the first degree of merit. 3. The report of the Massachusetts Medical Society; which though it was made before the disease was sufficiently known among us, and though the disease seldom appears in its pure state in Boston; presents some very excellent hints and descriptions; and is invaluable on account of the dissections which it records.—The little work of Dr. Strong, Jun. has been republished in Dr. Coxe's Philadelphia Museum for 1811; and is in part abridged in the New England Medical and Surgical Journal for July, 1812.—Dr. Strong's work contains not only a description of the genuine form of the disease, in winter, in country places; but also its treatment; and deserves much commendation. The same may be said of the publications of Dr. North and some of his associates.

But it is now time to speak of *symptoms*; which will the more easily be accomplished, since we have in effect described a *multitude of these*, as they appear in different patients; who

during the prevalence of our epidemic, are erroneously supposed to be labouring under *other* diseases as above enumerated. The following are to be considered as additional leading symptoms. Whenever three or four, and still more whenever any greater number, among these latter symptoms unite in any case, *during the prevalence of our epidemic*; (for in no case can they all unite;) there our disease is generally present; particularly if joined either by spots, or pimples, or sores. The order in which these *new* symptoms will be given, will in general shew their *comparative value*, as evidence, in every question as to the occurrence of this disease. The new symptoms are these. A slight affection of the throat, internal or external, which is sometimes merely a forerunner: a sense of coldness, not usually followed at first by heat, as in most other fevers; and yet not always implying that the patient is cold to the touch of others: a numbness in one or more parts, but often solely on one side: a loss of strength, more than in proportion to the other symptoms: a pulse, commonly at first slow, and then becoming weak and quick, though occasionally it is found strong (perhaps from the nature of the parts affected;) but in general, it is more or less given to fluctuate: a white tongue in the beginning, which may grow darker, especially by mismanagement: an attack sometimes so sudden, as to strike down the patient, whether he be still or in motion: faintings especially in females: flutterings, sinkings, coldness, and other sensations, which often alarm the patient, at or near the pit of the stomach: pains, sometimes very severe, in various parts, though in many cases confined to one side; these pains being often removable by external application, though oftener by perspiration; and frequently swiftly changing their places and particularly moving towards the head: pain, delirium, and other serious affections of the head: sickness of the stomach, which is sometimes distressing: a disturbed state of some of the senses, especially of the sight or taste: a frequent absence of thirst: urine in many cases but little changed: strangury sometimes even at the beginning: the stools commonly few in number, but sometimes natural throughout: bleedings, which if other circumstances are favourable, are of less moment than in some other fevers: lastly, no fixed periods or stages in the progress of the complaint and no striking crisis previous to its termination; (distinctions of this kind, if existing in nature, being lost during the treatment.)—Such are the *addi-*

tional symptoms, which demand the first inquiries of a practitioner: and which, when viewed retrospectively, will serve to characterize the disease. But a part of them are such as belong to the disease only in its *natural* form and progress, before medical treatment has disturbed its character; (for perhaps there is no disease more easily and essentially changed than this, either by good practice or by bad.) The symptoms also, we must remember, particularly regard the winter form of the complaint in country places in a severe climate.

The modes of *treating* this disease, however, regard only the practitioner. Communications on this head, in a newspaper, might tempt the inexperienced to use their own judgment, in a case where notwithstanding the frequent apparent simplicity of the attack and the favourable prospects of a recovery, the patient may be sent rapidly to his grave, by delaying one set of measures, or erroneously employing another. Even *practitioners themselves* are not always successful, in the use of new modes of practice. A person not of the profession may indeed easily perform *one part* of his task well; but the *whole* of it must be conducted well; which cannot happen with one ignorant of the sudden turns of this disease and the equivocal nature of some of its symptoms.—A bystander who interferes, is wholly responsible for his mistakes; but when a medical man is sent for, if the event be unfavorable, the friends of the sick have taken the best chance for success, which the case offers; and even the instruction furnished by a fatal issue, remains in the hands of one, who may turn it to profit in his attendance upon others.

But the practitioner on *his* side has also his duties to perform, especially in this state of things, which amounts in effect to a compromise; being bound to use every means to improve his knowledge, not only for the benefit of the sick, but for the reputation of his profession.

There are *preparatory* measures, however, in which zealous persons, not of the profession, may exert themselves in favour of those who are seriously attacked; to the satisfaction both of the patient and practitioner. The patient may be put to bed under every circumstance which can insure warmth and gentle perspiration. The feet also may be placed for a time in warm water. Teas may be made either from pepper-mint, spear-mint, penny-royal, ground hemlock, or common hemlock; and given hot. *Strong and fluid* broths, well seasoned, may be taken in

the same manner. The patient will *now be ready for medicines*; for how can medicines exert their virtues, when (for want of warmth and circulation) they cannot exert their power within the system to the proper extent? Senac makes a remark like this, which is full of wisdom; and has indeed other applications. Let the friends likewise procure the bladder of any animal, small or great, suitable for administering injections; and if a proper pipe cannot be had, let one be formed out of soft wood, or from a scraped tobacco pipe. Let yeast also, fermented liquors, and good spirituous liquors be provided; and the practitioner, when he arrives, will have little to wait for, even in the most desperate cases.

As to the character of the disease, *during winter*, it is naturally neither inflammatory nor putrid; nor is it then often bilious, unless with bilious constitutions. Some of its symptoms, however, demonstrate it to be of a *nervous* description, as others shew that it is *malignant*; that is, it has a tendency to spots or to sores, and to concealed dangers, which is conformable to the medical sense of the word malignant, with the best writers of different nations. Dissections also have manifested that there occurs in this disease, an irregular distribution of the masses of blood, and also of the red particles within those masses. For the present, however, and till we understand all that relates to this *state of the blood*, we may adopt the simple, though imperfect name lately given to this disease, of *malignant nervous fever*. The discontinuance of the name "spotted fever" is not merely desirable for the sake of correctness of speech, spots being neither *peculiar* to, nor *constant* in this complaint; but where this name prevails, the frequent absence of spots leads to doubts as to the existence of the disease. In justice, however, to those who invented the name or have submitted to its use, we must observe, that in some years the spots are far more frequent than in others; and that at all times they would be more generally sound, if properly looked for, in *different stages of the disease*. To the names "cold plague" and "numb plague," given to this distemper by our country friends, though in many cases expressive, similar objections occur; and the vague meaning of the term *plague* furnishes a new objection to their use. On the other hand, by keeping the term *nervous* in view, the practitioner obtains a monitory key for the principle

part of his practice ; while the term *malignant* will excite attention to the disease on the part of the sick and of their friends, and not diminish the respect due to the practitioner, after the patient shall recover.

We shall now make some detached remarks.

Spots and pimples are of no moment whatever in this disease, when it is well managed ; nor are the sores of much more importance as to the general issue, though often troublesome. The latter, therefore, require no *violent evacuants* under the idea of preventions ; the flowers of zinc or other suitable articles exhibited in a proper form, will commonly suffice for their cure when they occur.

This disease admits of frequent relapses, and can occur repeatedly in the same person. It is, likewise, naturally not of long duration. The most formidable cases also are frequently those from which there are comparatively the quickest recoveries. Senac in his admirable work on remittents and intermittents, appears indeed surprised at the terrible symptoms through which a patient may sometimes pass, without permanent injury.

If the disease be contagious, the contagion fortunately so operates, that the humane attendants on the sick scarcely suffer more by it, than those who shun their duty in this particular.

The variety of forms assumed by our disease, resembles what is seen in several epidemic fevers described by Dr. Rush ; and it is even exceeded by what is seen in the *GOUT*. The gout indeed is called by Dr. Rush, a disease of the *whole system* : but does not our disease affect the brain, nerves, and blood, and bear relation also to the skin, as being eruptive, and being in part cured by perspiration ; and may it not, therefore, easily have symptoms as various and as extensive as those we have attributed to it ?

We have repeatedly confined our present remarks to the *winter* form of our disease in country situations ; but the disease is not confined to the winter. It was first seen by Dr. Page, Jr. in some scattered cases in *Hallowell*, in the summer of 1807, after the decline of the inflammatory diseases which had for some years prevailed there. He was immediately aware of the change, especially as he was one of the first to suffer by its attacks in his own person. Many cases, and some very severe ones, appeared in a following summer. But still the

disease is most frequent and genuine in cold weather, and has shewn itself in Hallowell for several winters including the present. The number of cases treated by Dr. Page, Jr. or with his privity, has been about seven hundred in the whole ; and no where, perhaps, has the success on the new plan been greater. As to *places*, the disease seems to be less frequent near the sea ; and when it occurs there, it differs in several respects, as it is believed, from the form above described. What may be the variation arising from different modes of living, remains perhaps yet to be observed.

Though we have declined speaking of the methods of *treating* this disease, there is no reason for not attempting to hint at the means of *avoiding* it. Should chillness, numbness, or other important symptoms occur, Huxham's tincture of bark, or else cordials, warm drinks, or even at times, a warm bed, will probably remove them, if applied early ; but these remedies are only advisable, when there is really *something* to be removed. Looseness and costiveness are each to be shunned. So is whatever brings into play lurking seeds of the distemper, that is, the *exciting causes* as they are called ; such as watchings, intemperance, violent efforts, or careless exposure to weather, especially where symptoms of the disease have actually taken place. Keeping the skin clean and well rubbed, may probably be useful as a preventative, since one of the first steps in the cure is to open the pores. In any event, fear must be banished ; and where indeed is the cause for excessive fear, when the deaths do not exceed one in a hundred on the new plan, if pursued *from the beginning to the end*, with the help of good nursing ?

Strong liquors, taken to excess, cannot *prevent* this disease ; for intoxication weakens the body and deranges the mind and the senses, which circumstances are part of the disease. During the *course* of the disease, however, strong liquors are often beneficial, though given in great quantities ; but then it is because they do *not* intoxicate. Such is the insensibility of the patient to liquor, during the height of the disease, that spirits may then in some cases be drunk almost like water. To give medical cordials instead of spirits, is giving spirits under another name. Spirits do not produce costiveness like opium, nor occasion strictures like bark ; and when hot water is added to them, they excite gentle perspiration ; they also supply strength

and confidence ; they can easily be had of good quality ; and their management is sufficiently understood.

Mercury is variously spoken of in this disease. Dr. North omitted it, and lost about one in a hundred of his sick ; and Dr. Oliver Fiske, who used it liberally, had about the same success. Others have tried both experiments, and succeeded both ways. But it is to be observed that these practitioners, if they used calomel, did it *without joining purgatives to it*, in the early part of the disease, which is an important observation. Where bile is concerned, or the bowels are moved with difficulty, or in other particular exigencies, calomel would be rejected but by few practitioners. Certainly it does no harm in the celebrated mixture used by Dr. Fiske, of calomel, opium, camphor, and ipecacuanha ; for as to antimonials, they do not in general appear to be suited to the disease before us. But where the uses of calomel are at all equivocal, it seems inconsiderate to give it to such an extent as to produce a sore mouth, in a disease in which a sore mouth often occurs without being critical.

A word may be said of Fowler's mineral solution, which obtained its first reputation in the case of a little girl at Medfield, in March 1806, in consequence, probably, of its being combined largely with *wine*. The principal ingredient in this medicine seems useful :—1st. By increasing, according to its accustomed mode of action, the circulation of the stomach ; and thence removing the sense of coldness in it, and other evils. 2d. Because it is useful in cutaneous diseases, and the skin seems here affected. 3d. Because if it has tonic powers, it may employ this property also. The doses, however, ought to be small.

Yeast is, by many, given in this disease by the mouth or by injection. If found to be beneficial, it is not to be concluded, that it is because yeast is serviceable in putrid diseases, of which this is supposed to be one : for the argument proves too much, since the air or gas yielded by yeast is serviceable in many other diseases known *not* to be putrid. This air or gas then is, probably, merely useful as a stimulant ; and since it applies itself *more extensively to the surface of the stomach and bowels*, than any fluid or solid could do, it may render peculiar benefit.

A question now occurs, namely, are there two modes of curing the disease, since there are evidently two modes of practice respecting it ? A disease is best cured, when it is cured in a

direct manner, and *according to its nature*. But without referring to theory, we may ask, which way are there fewest deaths; also the shortest sicknesses when *recoveries* happen; and lastly, the fewest inconveniencies after the disease has ended? But as the question will again revive, whether there have not been *many* fatal diseases prevailing lately, instead of *one*, we shall make a new observation. *The burying ground proves the existence of an epidemic*; and the following is the more usual proceeding of nature in epidemic seasons. One disease reigns as epidemic, and other diseases which occur, commonly take the qualities of the epidemic, or else the epidemic borrows *their* outside form. In either case, the practice proper for the epidemic is in a principal degree proper for the diseases thus associated with it, whether the association be in form or in substance. Sometimes, indeed, more than one epidemic prevails; but this is not frequent. But there is yet a new point of view in our subject; for in the very same patient, symptoms of different diseases may *follow* each other in quick succession; but if one treatment with slight variations answers for the whole occurring in that patient, there has been but *one* disease. We repeat then, from a careful observation of facts, long made in an inland situation, that there has been but one peculiarly dangerous habit or constitution of things at this period, and that it has probably demanded one style of treatment. If practitioners, therefore, have cured any patients by remedies essentially differing from stimulants and diaphoretics, succeeded by certain tonics with a gentle evacuant occasionally intermixed in the latter part of the disease, it is to be feared that it has been by a less perfect method; and, perhaps, by changing the disease into another form. Yet it is allowed, that they may have *prevented* the disease in some instances by an evacuant.

Medical disputes, however, always ultimately come to a true decision; and, therefore, our greatest uneasiness should be on account of meddlers who are *not* of the profession. These, from seeing the manner of conducting a few cases, often think they know how to treat what some of them call a *cold* fever. But the cases of cold fevers are almost as *various*, and certainly they are *far more dangerous* than those of hot fevers. The plague of the east, for example, is one of these cold fevers, and is full of varieties. And independent of these existing varieties

of the present fever, new varieties are to be expected upon changes of weather and of seasons, as also when the present epidemic shall be in the act of yielding its place to another.

CASE OF CONGENITAL CATARACT;

With some Observations on the Means of artificially Dilating the Pupil in the Operations of Extracting and Depressing the Cataract. By JOHN HENRY WISHART, Esq. Fellow of the Royal College of Surgeons, Edinburgh.

[From the Edinburgh Medical and Surgical Journal.]

JAMES DRYSDALE, a boy about eight years of age, was brought to me from Kinross, on the 1st of October, with cataracts in both eyes. The pupils contracted and dilated very readily; he was able to distinguish day from night; and if the hand or any opaque body was held above and before his eyes, he immediately put his hand to it; but he was unable to see any object placed before him, or under his eyes. On dilating the pupils by the application of the solution of the extract of hyoscyamus, the cataract of the left eye was observed to be of an uniform dusky grey colour; that of the right had a ground of the same colour, but several small angular spots were perceived in it of a bright white colour.

From the history of this case, which I received from Mr. Annan, surgeon at Kinross, it appeared very probable, that, if the boy was not absolutely born blind, he had lost his sight a few days after birth. It was very soon observed, that there was something remarkable about the child's eyes; it was likewise noticed, that the child did not close the eyelids, even when exposed to the bright light of the sun. The child was about four months old, when it was positively ascertained that he was blind. There was evidently a great deficiency in the intellectual faculties; but it was difficult to decide, whether it was such as to prevent him gaining his bread, provided his sight was restored. His education had been totally neglected, and he spoke very indistinctly. He was very averse to allow his eyes to be touched, and expressed scarcely any anxiety for the restoration of his sight.

Under these circumstances, I resolved to try the effect of the operation for removing the cataracts, and it was performed on the 4th of October, assisted by Dr. Duncan, jun. Mr. Nasmyth, &c. Very great difficulty was met with in securing the patient. The pupils having been previously dilated by the solution of the hyoscyamus, and aware, from the appearances described, that I had a capsular cataract to operate on in the right eye, and a soft one in the left, I used a needle similar to that of Professor Scarpa, but with a smaller curvature at the point, and made very fine and slender. The lens in the left eye was found to be of a melicerous appearance, was readily broken down, and several of the opaque flakes passed into the anterior chamber of the aqueous humour. The cataract of the right eye was purely capsular. On being pierced with the needle, there appeared as if a thin vapour had passed before the pupil; and when the more dense parts were separated as much as possible, the pupil became almost clear. The eyes were covered with a few folds of wet lint, and a pledget of linen, spread with simple ointment, was applied over it, and secured with a single turn of a roller round the head, and he was put to bed.

5th.—Slept almost all the afternoon, and made no complaint, and has had a good night. Pulse 96; skin rather hot. The eyes were bathed with warm water: the lids adhered slightly. In the morning, while eating his breakfast, said he could see light. On attempting to open his eyes, he resisted so strongly that I thought it prudent to desist. The lint was removed, and the eyes were covered with a compress.

Hab. stat. pulv. jalap, gr. xii.

6th.—Powder operated well; skin cool, pulse natural. After bathing the eyelids with warm water they were opened. The pupil of the right eye is nearly clear, except a very small speck at the under part; the pupil of the left eye is full of opaque fragments floating about. There is slight redness of the conjunctiva, and some ecchymosis at the place of the puncture of the needle.

7th.—The pupil of the right eye still continues clear; that of the left improving. Both eyes are very tender on exposure to light, but not painful. Last night fell a crying on being left in the room without a light.

8th.—Yesterday evening complained of headach. This morning both eyes were found to be inflamed, especially the right. They are rather more sensible to the light than before, but he says, they are not painful. He was ordered a repetition of the laxative, and to have the eyes bathed with a collyrium of a grain of the muriate of mercury in six ounces of water, with a drachm of the vinum opii, to be used a little warm.

9th.—Inflammation of both eyes much abated, and he opens them very readily to day. The pupil of the right eye is perfectly clear; that of the left is becoming clearer at the upper part. Cont. collyr.

13th. Right eye nearly free from inflammation; the pupil of the left eye much clearer.

From this date the left eye gradually improved, and, by the 6th of November, when he was sent home, more than one half of the pupil was quite clear, and he saw tolerably well with it. Both eyes had lost, in a considerable degree, the rolling motion; but, from the mental defect already noticed, it was difficult to ascertain the exact state of his sight. However, he seemed highly delighted on being dressed in a new suit of clothes. It may be further mentioned, that his father is said to be in a state approaching to idiotism.

In speaking of the dilating the pupil, previous to the operation, I mentioned that I had used the solution of the extract of hyoscyamus, and not the belladonna, which is now so generally used in this country for that purpose. The singular property possessed by these narcotics has been long known on the continent, and in this country was first used in the operation for cataract by the late Mr. Saunders. Van Swieten,* speaking of palsies brought on by exposure to the vapours of arsenic, mercury, &c. remarks, that there are other poisons which may produce the disease even externally applied, and relates the following case:—"A lady of quality applied a little bit of a fresh leaf of that kind of nightshade which is commonly called *Belladonna*, to a small ulcer below her eye, which was suspected to be cancerous, and, in a night's time, the pupil of the eye lost all its motion, remaining quite dilated, even while the eye was exposed to a strong light; but the nightshade being removed,

* Commentaries on the Aphorisms of Boerhaave, Vol. X. § 1060.

the motion of the pupil gradually returned." Ray affirms,* that he saw this case, and that it did not happen accidentally; for three different times, on repeating the application of the nightshade, the same effect constantly followed. Galen† asserts, that he has frequently observed the same bad effect from the imprudent use of opium, mandrake and henbane, to relieve violent pains in the eye; and more modern authors mention cases of blindness, squinting, weakness of sight produced by the application of stramonium, mandrake, aconite, cicuta, &c. A very remarkable case is related by Dr. Daries, in his inaugural dissertation *De Atropa Belladonna*.‡ In preparing some extract of this herb for Reimarus of Hamburgh, and bruising the recent plant with the flowers and fruit, a drop of the herb or of the succulent berry spirited into his right eye. He endeavoured to remove the slight irritation by rubbing his eye. In three minutes, on the uneasiness going off, a slight dimness of sight was observed, which increased rapidly, and in a quarter of an hour complete blindness came on, without any pain, the other eye remaining sound. Being very much alarmed, he consulted Reimarus about his case, and after three weeks the sight was completely restored. But Reimarus's account of the case, and his inferences from it, will be more satisfactory. "Quod attinet ad oculum tuum, olim, inter conscindendam *Atropæ Belladonnæ* herbam, ita affectum, ut per aliquod tempus fere visu privaretur, probe memini. Deprehendi nempe iridem ejus oculi adeo resolutam et patentem, ut fere dimidiæ tantum lineæ latitudo ambitus superesset, ampla vero coroidæ nigrities transpareret. Jam, cum effectum similem ab ore assumpta *Belladonna* observari nossem, non dubitavi, quod ipse tu quoque suspicatus fueras, externe applicatum venenum idem efficere posse et ab insperso inter parandum succo paralyisin illam ortam, quam tamen duraturam haud esse speravi. Interius jam acetum quoddam concentratum assumpseras, in cujus usu pergendum esse ratus sum: suasi tantum, ut simul ad irritandos nervos exterius volatilis oleosi spiritus vapores oculo ægro admitterentur. Sive igitur sponte, seu his adjuvantibus medicamentis, factum est, ut

* *Histor. Plantar.* L. xiii. c. 23, p. 680.

† *Method. Medendi*, L. iii. c. 2.

‡ *Sylloge selectorum opusculorum argumenti Med. Practici*, collegit et edidit E. G. Baldinger, Vol. II. 8vo. Gottingæ, 1777.

sensim et visus oculo et contractio pupillæ redirent. Ego vero mecum reputans, istam *Belladonnæ* vim haud spernendo in chirurgia usui esse posse cogito. Nempe cum in excidenda lente crystallina, sicut pelluciditatem amiserit, haud leve impedimentum objiciat irritatio et contractio nimia pupillæ, adeo ut sæpe iris per educendam lentem laceretur; quidni succo *Bel-ladonnæ*, paralysin illi innocuum per aliquod tempus inducimus? nec solum extractio lentis inde longe faciliior obtineretur, sed et simul illud incommodi, ne oculus repentino lucis sensu lædederetur."

As far as I have been able to learn, Reimarus was the first who proposed using the belladonna in the operation for extracting the cataract,* and in the *Memoirs de le Société Philomathique* for the year 1797, he mentions, that Dr. Grasmeyer of Ham-burgh employed it with success; and I have been informed by my friend Dr. Duncan, junior, that in the year 1796, he was carried by Reimarus to see Dr. Grasmeyer operate on a case of cataract where the belladonna had been previously applied.

Hitherto I have chiefly noticed the use of the belladonna in dilating the pupil; I shall now relate various experiments made with the extract of hyoscyamus, as also a few comparative trials made with these two narcotics. Professor Himly, of Gottingen,† accidentally learnt the effect of the local application of the hyoscyamus, and recommended its use in the treatment of some diseases of the eye. After the application of a collyrium of a solution of the extract of hyoscyamus, he found the eye exactly in the same state as in a case of complete amaurosis, viz. the iris quite motionless, so far drawn back, that it formed a ring scarcely a line in breadth, with its inner edge turned a little backwards, so that its anterior surface was concave towards the central point; the pigmentum nigrum, at the bottom of the eye, had not its usual black colour, but a greyish appearance. The patient, notwithstanding, saw as well with this eye as before, except that there was something glimmering before it. Very soon after rubbing a little of the ol. cajeputi on the eyebrow, the pupil appeared beginning to contract, and the dilatation in a few hours

* This proposal of Reimarus is also noticed in Dr. Underwood's *Treatise on the Diseases of Children*, Vol. II. p. 53.

† *Ophthalmalogische Beobachtungen und Untersuchungen*, St. I. Bremin, 1801.

was completely gone. That this effect follows in all cases he completely proved by various experiments. He uses a solution of a drachm of the extract in an ounce of water, of which he lets a few drops fall into the eye, and keeps it there a short time by bending the head backwards. It occasions no pain, and no perceptible redness. The paralysis of the pupil comes on in an hour, and continues five or six hours. As the action of a small quantity of the extract applied topically is so powerful, and so entirely local that only the iris is affected, and not the retina at the same time, he is led to point out the uses which the practical oculist may derive from this fact.

1st. The application of this remedy in cataract affords a certain test whether it adheres to the iris or not. For, by using the hyoscyamus, we can make the examination with much greater accuracy, than by the former mode of opening and shutting the eye; because in the latter way we must examine quickly, and in a dull light, whereas, by using the hyoscyamus, we may do it with the greatest deliberation, and in the brightest light.

2dly. The application of this extract enables us to make the most accurate investigation of the nature of the cataract, as it may thus be examined to its utmost extent and in the clearest light. It also assists us in the diagnosis of the capsular and lenticular cataract, of the fluid and firm cataract. It also appeared to Professor Himley to be of service in a still more important point of the diagnosis. For experience has taught him, that the patient affected with cataract, seeing coloured points and bodies, does not always make the prognosis of the operation so serious as was formerly supposed: for this does not always arise from a defect of the retina, but sometimes from the nature of the opaque lens. If these appearances arose from a particular refraction in the lens itself, then they would be diminished by the dilatation of the pupil, as the rays of light would be transmitted not only by the nucleus of the cataract, but also by its more transparent part: if, on the other hand, they proceeded from a disease of the retina, the dilatation of the pupil would not lessen them, but rather increase their number, as more light would then be transmitted to the retina.

3dly. It proves a palliative remedy in common cataract, as, by its local application, we can produce that state of the iris

most favourable for the vision of such patients in a greater degree, and in the bright light of day. But he is unable as yet to decide whether it may be applied so constantly, and so frequently repeated, as to make the dilatation of the pupil permanent, at least during the day, without being hurtful, as he has never used it so constantly. The iris might be forever deprived of its contractile power, and a *mydriasis ex consuetudine* produced, which would be very hurtful in the event of an operation for extraction being to be performed. On the other hand, in patients who could not bring themselves to have the operation performed, or in whom it was inadmissible, this paralysis of the pupil, by the continued use of the remedy, would be very desirable. Farther, perhaps, from its constant use, its action might extend deeper in the eye, even to the retina, and thus not only a paralysis of the pupil, but even an amaurosis might arise, although this is not so likely to happen from the weaker hyoscyamus, as from the more violent remedies, the belladonna, laurocerasus, &c. But if we should not wish to employ the hyoscyamus so often as to keep the pupil constantly dilated, or if, from its repeated application, we were afraid of an incipient paralysis, there may be situations in the case of blind persons, in which it would be of very great importance to them to see clearly for a few hours, or even a few minutes.

4thly. This remedy procures vision in many cases of opacities of the cornea; as when the opacity is chiefly situated immediately before the pupil, and prevents the rays of light from falling on the retina, although the cornea is sound in other places. The hyoscyamus here forms an artificial pupil without an operation, by enlarging the pupil, and allowing the entrance of the rays of light at the side of the opacity.

5thly. In many cases the application of the hyoscyamus facilitates the operation for cataract; when, for instance, even after a sufficiently large incision, the cataract does not pass out, from the pupil being too much contracted, and remaining so, though the eye be left at perfect rest. In this case, however, he recommends the precaution of not operating during the greatest dilatation of the pupil, as there would be great danger of causing a prolapsus of the vitreous humour, as it would receive too little support from the iris. He, therefore, allows the greatest effect to be over, and operates when the pupil has already con-

tracted, and the iris acquired a slight degree of motion. The application of the hyoscyamus will also prove beneficial, if we operate according to Beer's method,* as the cataract, passing out along with its capsule, requires greater yielding of the pupil; and if partial adhesions of the iris to the capsule are to be separated, the wider the pupil, the more safely can the necessary means be used for their separation; and likewise, if the capsule is opaque, it can be more completely destroyed if the pupil be previously in a state of dilatation, and the danger of wounding the iris with the knife, in the case of a very flat cornea, would thereby probably be diminished.

6thly. The dilatation of the pupil by the hyoscyamus, would be of great use in Conradi's† method of effecting the absorption of the cataract by opening the capsule; as, in this case, the

* This mode is very accurately described in the *Encyclopedia Britannica*, article Surgery.

† From the well known fact of the crystalline lens being often gradually absorbed, whether it be of a hard or soft consistence, if the capsule is opened, and the humours allowed to come into free contact with it, Conradi was led to propose the following simple operation. "A small lancet-shaped cataract needle is introduced through the cornea, exactly as the knife in extraction, only a very little farther distant from the iris. The point is passed through the pupil, and when the capsule is sufficiently opened, the needle is withdrawn from the eye, which is bound up loosely for two or three days, as in general, after that time, so slight a wound of the cornea is quite imperceptible, and then we wait for the absorption of the cataract. The needle does not require to be quite so long as Richter's cataract knife, and it should not be more than a line and a half, or two lines in breadth. Its thickness should be very small, merely to give the blade a sufficient degree of firmness; it must be sharp on both sides for nearly one-half of its length." Conradi adds, "It is unnecessary to dwell on the evident advantages of this operation; it is much more easily performed than any other. From this very slight and trifling wound of the insensible cornea, no bad symptoms are to be dreaded, which partly occur during extraction and depression, partly follow after these operations. If, after eight or twelve weeks, the cataract is not absorbed, any other operation may be performed as easily as if this puncture had not been made. The patients have lost nothing but the time; and as they have in general been many years blind, it is not of much consequence, a few weeks, more or less, in order to make the trial of freeing them from their disease by a safe and easy method." —See Arnemann's *Magazin für die Wundartzneiwissenschaft*, 1 B. 1 St. Gottingen, 1797.

success depends entirely on the free access given to the aqueous humour to the lens; consequently, the capsule must not be opened merely in one small point, but a large incision must be made in it, which can be readily done if the pupil be previously dilated.

Lastly, The local application of the hyoscyamus is particularly useful in the contraction of the pupil, which is not accompanied by an adhesion of the iris to the capsule.

In calling this state of the iris a paralysis, Himly wishes to be understood to mean nothing further than that the stimulus of light is then capable of exciting the usual motion, which it was enabled to produce only a short time before, and which is not prevented by adhesion to the capsule, or other morbid affections of the iris.

Soon after the publication of Professor Himly's observations, his work was translated into French, but, by a mistake of the translator, *hyoscyamus* was rendered *belladonna*, and in consequence of that error, various experiments were made in Paris with the latter substance. Dubois employed it in the clinical school on a patient who had a very small pupil. The lens passed out with the greatest ease, and he did not find Himly's caution necessary respecting the danger of a prolapsus of the vitreous humour. In his experiment, the pupil contracted immediately after the lens had passed out.

The late Professor Schmidt of Vienna made various experiments, both with the hyoscyamus and belladonna, externally and internally. He found that the dilatation of the pupil does not take place in every case, though he was unable, from the small number of his experiments, to decide in what cases it takes place, and from what cause this difference arises. The death of that eminent oculist has prevented the prosecution of these investigations; but I have been enabled to collect the following account of some of his experiments.

In the month of May, 1803, he operated on twenty-nine patients of both sexes, affected with cataract, in the General Hospital at Vienna; on twenty eyes by extraction, and twenty-two by depression of the lens. Of these twenty-nine persons, twenty-six recovered their sight. Eight were selected as the subject of his experiments. In five he tried the application of the solution of the hyoscyamus four hours before the operation;

in three he used the inspissated juice of the leaves of the belladonna as many hours before the operation. The phenomenon of the retraction of the iris, (dilatation of the pupil,) occurred in all the eight patients, but the degree of the dilatation was different in each individual. The difference of age and sex had no influence on it.

Of these eight patients, he operated on three eyes with the couching-needle, through the sclerotic and choroid coats, and six by extraction through the cornea. Of the three that were couched, in a woman the iris expanded completely during the puncturing with the needle, and the pupil assumed its smallest dimensions. Of the six operated on by extraction, the same phenomenon was observed in one woman and one man; and in two others, the expansion of the iris evidently took place, but was not complete. To one of these three, where the complete expansion of the iris came on during the incision of the cornea, the belladonna was applied. Of these nine cases, only one was attacked with iritis after extraction, and consequent closure of the pupil.

Of the twenty-two eyes operated on by extraction, there were only two where the cataract was followed by a slight effusion of the vitreous humour, and this only occurred in the eyes subjected to experiment. It ought also to be observed, that this protrusion of the vitreous humour occurred without any strong pressure having been applied to the eye-ball; that the cataract was purely lenticular, and there was no unusual adhesion of the capsule; and lastly, in both cases, the belladonna had been used. Professor Schmidt lastly remarks, that, in all the six patients, it appeared to him as if the cataract was more *unwilling* to come out, (if the expression may be allowed;) and that he was convinced, that neither the size of the incision, nor of the opening of the capsule, nor any sort of adhesion, could have the most distant share in producing this circumstance.*

I have been induced to give very copious extracts from these works, on account of the difficulty of procuring them, and the importance of the information to the practical surgeon which they contain. Of late, I have generally used the solution of hyoscyamus in preference to the belladonna, as in some cases

* See Ophthalmologische Bibliothek von Himley und Schmidt, St. 11. B. 1. Jena, 1803.

of acute inflammation of the eye the belladonna seemed to excite pain. In one case of cataract, I have occasionally used the hyoscyamus as a palliative cure for more than a twelvemonth, and have not observed any bad effects from its continued application. However beneficial the dilatation of the pupil may be in the operation of depression, or of breaking down the lens in congenital cataract, it does not appear to me that it would be equally so in the operation of extraction. For I have always found that the incision of the cornea was made with less risk of wounding the iris, when the pupil was contracted; and I have never met with any difficulty in getting out the cataract, by a gradual and continued pressure on the eye. The iris being expanded, would bring it immediately under the edge of the knife, and make it more apt to be wounded, or it might fall forward after the knife had cut itself out, an accident which happened in two cases where I operated, but was not attended with any bad consequence. In these two cases, I found the application of the hyoscyamus of great use in drawing the iris back into the eye from between the edges of the wound, which then healed, and both patients now enjoy very perfect vision. I have also used it in cases of protrusion of the iris through ulcers of the cornea, the iris retracting, and allowing the ulcer to cicatrize. I very lately also used it with singular advantage in the following case. A woman about forty came to me with the pupils of both eyes very much contracted, the iris adhering firmly to an opaque substance behind; but the opening was so small as to make it impossible to ascertain the nature of the opacity. She had lost the sight of the left eye for nearly five years; and the vision of the right was much impaired. In both eyes the affection came on subsequent to violent rheumatic attacks in the head and neck. I conceived, that if the hyoscyamus was applied to the eye, and the adhesions separated, the pupil would dilate. Accordingly, I applied the solution an hour before, and then introduced the curved cataract needle, about two lines behind the cornea. As soon as the adhesions towards inner angle of the eye were separated, the pupil sensibly dilated, and the point of the needle was seen more distinctly behind it, and was moved about with more freedom, in order to separate the rest of the adhesions. After the operation, the patient could distinguish the wall of the room.

I have always used the hyoscyamus dissolved in water, in the proportion of a drachm to the ounce. In Drysdale's case, I tried the extract merely softened with water, but did not find that it occasioned a greater dilatation than the solution. The difficulty of procuring the belladonna, may also be mentioned as a reason for recommending the hyoscyamus. I lately applied to two of the principal apothecaries here, and could not get any of the recently prepared extract.

REVIEW.

Elements of Surgery, for the use of Students. With plates.
By John Syng Dorsey, M. D. Adjunct Professor of Surgery
in the University of Pennsylvania, one of the Surgeons of
the Pennsylvania Hospital, &c. 2 Vols. 8vo. Philadelphia.
Published by Edward Parker, and Kimber and Conrad.

THE improvements in Surgery, during the century past, afford a high degree of pleasure to those, who love and cultivate the art. Although surgery can boast none of those brilliant discoveries with which the chemical philosophers have dazzled mankind; on the other hand, it displays no hypothetical doctrines, but a regular series of observations, of unequalled importance to the happiness of man. The doctrines of inflammation, the treatment of wounds, the operation for the stone, the surgical anatomy of hernia, its treatment and its operations, the management of amputations, the treatment of lacrymal and intestinal fistula, the operation for aneurism and the wounds of arteries, the discovery of the peculiar character of fungus hæmatodes, the management of fractures, especially of the thigh, the treatment of strictures in the urethra by caustic, the operations on the eye and ear are among the circumstances, which mark the present as the brightest age of surgery. How different is the character of the surgeon of the present day from that of the seventeenth century. Manual dexterity was the greatest accomplishment of those days; but of the present, a knowledge of the salutary processes of nature and a deliberate step to facilitate their accomplishment. The surgeon was then surrounded by a formidable apparatus of instruments which he employed with the rapidity and violence of an artisan; a few simple instruments are now found sufficient, which are never used with haste, but by the inexperienced. Simplicity and success in the treatment of surgical diseases have advanced with equal step. Perhaps this simplicity may sometimes have been

carried too far. The English surgeons are fond of simplifying their treatment and sometimes neglect the use of apparatus, which the French know how to render useful. The treatment of fractures of the thigh presents an almost solitary example of the advantages of a complicated and difficult apparatus, over one more simple and of easier application.

The foundation of these great changes has been laid by the study of anatomy: for although some of the finest discoveries in anatomy were made in the preceding century, yet the study of this science did not become common in the west of Europe till the time of Cheselden and I. L. Petit. Charles V. called a council of divines to determine whether it was lawful to dissect the human body for the purpose of learning its structure. Harvey obtained the first hints, which led him to a knowledge of the circulation, from the Italian school. The students of the Italian seminaries carried a knowledge of and a taste for anatomy to all the countries in Europe; where the gloomy superstitions of the earlier ages could no longer obscure the light of philosophy. By the study of anatomy the surgeon learnt how to guide his knife with safety through the most dangerous parts of the body; while the gradual introduction of a more correct method of observing and reasoning led to the improvement of the principles of the art.

Little can be said in favour of the surgery of our own country, even of the present day. The surgeons formed during the revolutionary war have generally quitted the theatre of action. Opportunities for acquiring anatomical knowledge have existed during so short a time back, that a small part only of the actual practitioners of surgery have yet become possessed of that information of the structure of the human body, without which the most dreadful errors may be committed. Fortunately for our country these opportunities now exist and are increasing. A new set of men issue forth into the world well fitted in all the important principles of their profession to avail themselves of the fruits of experience. Surgical works of merit are becoming sufficiently common to be at the command of every one. Above all, an ardent spirit of improvement pervades the country.

We have not been wholly destitute of men, who are on a level with the best surgeons in Europe, and who have even done

much toward the improvement of modern surgery. At the head of these the public opinion has placed Dr. Physick, professor of surgery in the university of Pennsylvania, and a relation of the author of this work, to which he has contributed important observations. A pupil of the celebrated school in which were formed Cooper, Cline, Abernethy, Home, and all the most distinguished English surgeons of the present day, Dr. Physick has had the advantage of that kind of inspiration which the genius of John Hunter transfused into all who surrounded him. If to this, we add the benefit of experience to an active and discriminating mind, we shall readily discover why we have a right to expect and have actually seen so many acute observations from this distinguished surgeon. With such high ideas of the character of Dr. Physick, we receive with great satisfaction a work which must contain the most important results of his experience.

This work possesses another great advantage, which the author has stated in his preface: that of presenting a fair view of the best practice of the French and English surgeons. The national prejudices of the two countries often oppose a barrier to the introduction of improvements from the rival country. The American views with an impartial eye the comparative merit of their different modes of practice, and adopts the best.

The author disclaims a pretension to originality except in a few instances, and in introducing the opinions of the different writers whom he quotes, he has not thought it necessary to change their language for his own; but he has very candidly and judiciously allowed them to speak for themselves.

The first volume contains the doctrines of inflammation, the treatment of wounds, fractures and dislocations, and a description of surgical operations on the head. The second describes the operations on the trunk and extremities.

The treatment of fractures makes an important and a meritorious part of this work. It is well known that the English surgeons, in attempting to simplify the practice of surgery by rejecting the complicated apparatus of the ancients, have, in this instance, admitted the introduction of a loose and ineffectual treatment. The cure is trusted too much to the operations of nature, and the consequence is, that we see a great number of distorted and useless limbs following this kind of practice. Those, who have had an opportunity of seeing the treatment of

fractures by the French surgeons, have not hesitated in giving the preference to their exact and methodical applications. The most conspicuous example of superiority is seen in the treatment of fractured thighs, by Desault. Before the time of that eminent surgeon, many French writers had proposed and some had executed different methods of keeping up a continual extension of the limb, in order to counteract the contraction of the strong muscles of the thigh. These were not commonly attended with sufficient success to bring them into use. Desault proposed a plan, the principle of which is perfectly simple, although its application is more complicated than any other we usually employ. A few words are sufficient to show the superior advantages of Desault's method. Fractures of the thigh treated according to the most approved method of the English surgeons, which is that of Pott, are always followed by a shortening and turning out of the limb. Mr. Astley Cooper, no less remarkable for his candour than his eminent talents, has said that he could at a glance, distinguish people who had had a fractured thigh, as they walked along the streets of London. Their limb was shortened and the foot turned out. In private practice as well as that of hospitals, we know no instance of a better result. The method of Desault prevents these deformities. There can be no question therefore as to the propriety of employing it as often as possible; for it is not possible to employ it always. The pressure in the perineum, guarded as it may be, will sometimes be followed by excoriation and gangrene. The pressure on the foot will sometimes cause insupportable pain. An instance of the kind has occurred within our notice, where the pain was so acute, as to be followed by delirium, before the surgeon could be called to untie the bandage. The consequence in this instance was, that the train of healthy actions, by which the bone should be united, was broken up, and no union of the fractured portions took place, till six months after the accident. Such occurrences should render the surgeon cautious and attentive; but they are not frequent enough to form an objection to so important a part of practice.

Fractures near the condyles of the os humeri are often followed by an incapacity of using the joint freely. To prevent this difficulty, Dr. Physick applies splints which keep the arm bent at a right angle. At the end of a week, these splints are re-

moved, the joint is gently extended and flexed every 48 hours, the splints being carefully re-applied in the interval. At the end of 3 weeks, splints are applied, which keep the limb bent at an obtuse angle.

Fracture of the radius, near its lower extremity, is one of the most common of fractures, and the most liable to be followed by deformity. The author recommends the same treatment, as in fracture of both bones of the arm. It is necessary however to examine this fracture often to ascertain, whether deformity is like to take place; and the most remarkable and disgraceful deformity, that in which the radius gets twisted over the ulna, may be prevented by taking pains to keep the bones of the arm parallel, by turning the hand outward, and securing it in that situation.

The indefatigable activity of Desault was directed to the invention of a new method of treating fractures of the clavicle, which is approved by the author and which he considers, to be generally adopted in this country. We are ready to allow that the common treatment by the stellate bandage and a direct compression on the fractured part is generally useless and sometimes hurtful. Much better is it to leave the arm without any bandage, except a supporting sling, still however, we are not ready to adopt the complicated bandages of Desault. They seem formidable to a degree which the graveness of the accident does not authorize. The arm is enclosed in bandages, the whole trunk is enveloped by innumerable turns of the roller, which hardly admit the patient to breath, or enjoy a moment of comfort. But we have a more serious reproach to make against this practice. An example has occurred within our notice, of a total loss of the use of the arm, produced by the compression of the nerves by this bandage; a loss which the most vigorous applications and a lapse of four years have not repaired. Admitting that this might have occurred from a want of attention on the part of the surgeon to the frequent change of dressings and examination of the arm; yet the possibility of such an occurrence is a sufficient objection to the practice, unless the evils it is to remedy are very considerable. Now this we think not to be the case. Deformity after fracture of the clavicle is certainly more rare than we should be led to suppose by the language of Desault, for we have never had an opportunity of seeing an in-

stance. The fracture sometimes occurs in children and is cured by the natural process, even without being discovered till afterward. In such cases the prominence at the fractured part is evident on examination, but is not sufficient to constitute a deformity. When these patients have been treated by the surgeon, according to the common method, the prominence is hardly ever remarkable and yet the motions of these young subjects are so constant and irregular, that the applications must for the most part be considered as ineffectual, and the case falls into the class of those, cured by nature alone. It is to be inferred that the method of Desault is not necessary in young subjects: in whom the arm is light and the shoulder therefore not liable to be drawn down. If in one of more advanced age, the fractured ends of the bones should be removed from each other more than usual, it might possibly be necessary to resort to it. Probably it will be found sufficient in every instance to apply first a small cushion under the superior part of the os humeri, to push the upper part of that bone outward; second, a double headed roller carried once or twice round the lower end of the os humeri, crossed like the spica bandage between the arm and the body, and carried once or twice round the body; third, a sling carefully applied and well secured to the other parts of the dressing. This bandage, formed on the plan of that of Boyer, we have found sufficiently simple and effectual.

The operation for the cataract, as it concerns the most beautiful of the organs and the most interesting of the senses, has excited the lively attention of the operating surgeon. At the present day, the inquiry respecting it which has been most agitated is that which relates to the comparative merits of extracting and depressing the cataract. The former method is the most expeditious and satisfactory when it succeeds, the latter is the most safe. We should have conceived the question to be settled in the mind of the young surgeon by the observations of Mr. Saunders and his imitators, had not the author of the present work given an opinion in favour of extraction. The absorption of the cataract, after depression, has been generally admitted for some time back. The occasional absorption of undepressed portions could hardly escape the observation of those, who have had much experience in the operation, and Conradi actually proposed a method in which the cure was to be effected by ab-

sorption. It was however left for Mr. Saunders to present this important fact in its strongest light and to apply it to practice in the fullest extent. He has demonstrated that the crystalline lens may be allowed to remain unmoved in its place, there to undergo a complete absorption, after the aqueous humour has been admitted through an opening in its capsule. This operation he has executed, either on the fore part of the eye by a puncture in the cornea and anterior part of the capsule of the crystalline lens, or by a puncture through the sclerotica, choroides and retina behind the transparent cornea. In these operations the pain is slight, the subsequent symptoms are mild, the solution and absorption take place slowly yet surely. Sometimes indeed it is necessary to repeat the operation; but the patient always submits, with more readiness and less apprehension to the second than the first. Sometimes also, the capsule, becoming opaque, forms a secondary cataract; an inconvenience which may follow every method of operating. Mr. Adams, a pupil of Mr. Saunders, has rendered the operation more certain in some respects, by thrusting the broken cataract, through the pupil into the anterior chamber of the aqueous humour. In this case, the capsule is commonly torn in pieces, and of course a secondary cataract cannot occur. The formidable array of cases, which he sets forth, is not sufficient to convince us that this operation can be done with all possible ease and safety; nor that Mr. Adams has not sacrificed the greatest advantages of Mr. Saunders' improvement, by lengthening and complicating the operation. The simplest methods are best, when they are adequate to the end. Let Mr. Saunders' beautiful operation be fairly tried, before we adopt those which are more hazardous. After repeated experiment of all the methods, sanctioned by the recommendations of eminent surgeons, with the exception of Sir James Earle's serpent tongued needle and forceps, with great confidence and pleasure can we give an opinion decidedly in favour of the operation of Mr. Saunders, reserving that opinion so far as to be influenced by future operations. A simple puncture in the anterior part of the capsule will often be followed with success; but it is not necessary to circumscribe the opening to a mere puncture, provided the lens be not displaced, nor the instrument retained long in the eye. Simple as this operation is in its effect upon the organ, it cannot be admitted to be

one, in which science and skill are of no importance. Will any one believe that a person unacquainted with the structure of the coats and muscles and vessels of the eye, with the precise situations and relations of the crystalline and vitreous humours and their capsules, with the structure of the iris and the ciliary processes, can attack a cataract with facility and the hope of success? Will any one believe that a novice can pass a needle into the obscurity of a trembling and agitated eye with as much safety as a Scarpa and a Saunders? Perhaps there is no operation, in which the surgeon finds a greater difference in the facility and exactness of his early and his mature practice. That one operation exhibits a greater appearance of dexterity than the other must be admitted; as well as that in the one, all mistakes are discovered to spectators, while in the other they may remain concealed; but every days observation shows that success in the internal operation, as well as the external, is to be obtained only by science and experience. A melancholy proof we once had that mistakes in extracting the cataract are not to be concealed, and that they occur even to those who pass for dexterous operators. A French surgeon of the highest reputation, in performing the operation of extraction, had no sooner made his incision through the cornea, than, either from a careless pressure on the globe of the eye, or, as was said, in consequence of a spasm of the muscles, the whole contents of the organ were thrown out upon his coat. With admirable coolness he immediately told his patient, "*Monsieur, vous avez perdu votre œil,*" "*Sir, you have lost your eye.*"

The field for remark, afforded in a whole system of practical surgery, is too extensive to be examined in every part. In selecting the subjects for these desultory remarks, we have principally adverted to the parts, in which the author's opinions are in some measure different from our own. We can however, with great confidence recommend the work to practitioners of surgery, as a correct view of the most modern and approved practice. That part, which relates to fractures and dislocations, is particularly valuable; the account given of aneurism and hernia is very full and satisfactory, and the whole work is enriched with many original observations from the practice of Dr. Physick and the author.

INTELLIGENCE.

Imperial prize for the best dissertation on Croup.

THE competition opened on Croup has not only excited the zeal of those who make pretensions to the prize ; but it has also awakened the attention of all physicians, and of all men who fear to see removed from them by a cruel disease the objects of their tenderest affections. The result of a competition so important and on which the munificence of a sovereign was to shed so much splendor was expected with impatience from all quarters. The prize had been proclaimed, but this was not all, it was necessary to state to the public the motives which had determined the choice which had been made, and it is with this view that his excellency the minister of the interior has determined that the report which had been addressed to him by the commission charged to examine the memoirs sent to the competition should be printed. This is the work of which we are to render an account to our readers.

It has been digested by M. Royer Collard, secretary of the commission, and it does him great honour, as much by the justice, the accuracy, and the method which prevails throughout the discussions, as by the purity of stile which appears from the beginning to the end of it.

We discover in it at once the pen of a very excellent writer as well as the genius of a man, endowed with rare talents, but this belongs to the whole commission, which had been chosen from among the most distinguished physicians of the capital.

The reporter begins by giving a precise history of the various operations of the commission. It shews with what order and attention it has proceeded to the examination of the memoirs, which were eighty-three in number, but which were reduced to seventy-nine, because four were written in a foreign language and were on this account alone excluded the competition.

By a preliminary labour these memoirs have been divided into three series, viz. the good, the bad, and those of a middle character, sixteen memoirs were ranked in the first class and were made the objects of a farther examination. Each of the members of the commission has read them and analysed them particularly, and it was not till after each had gained a particular knowledge of them, that the general assembly was held where the merit of each memoir was to be discussed and appreciated. These discussions occupied six sittings, the result was then transmitted to his Excellency, who has approved the choice of the commission, and who, with the approbation of his majesty the Emperor, has proclaimed the prize, and the honourable mention, which the commission has proposed.

We should in effect recollect that the prize of twelve thousand francs has been divided between M. Jurine of Geneva, and M. Albers, of Bremen. And that honourable mention has been obtained by M. M. Vienseux of Geneva, Caillau of Bordeaux, and Double, physician in Paris, besides these a memoir has been distinguished by the commission as containing a remedy which the author considers as a certain specific against croup. These six memoirs are successively analysed in the report of the commission with an attention proportionate to the interest which they possess. The two first having been judged worthy of a prize merited a very particular attention. The reporter commences by giving a detailed account of each of them, following the divisions established by the *programme* and adopted by the authors. There follows each extract a concise and very luminous recapitulation, which contains the substance of the whole memoir, then he opposes the two memoirs to each other and deduces their respective merits and defects, and shews that they are equally excellent which authorises placing them on an equal footing and decreeing them an equal prize. As to the memoirs, to which they have decreed honourable mention, they are also analysed but more hastily. That of M. Viouseux has, according to the remarks of the reporter, great analogy to one of those which has obtained the prize. It is inferior to them but comes says he immediately after them. The second, that of M. Caillau has appeared throughout remarkable in the opinion of the faculty.

In that of Mr. Double, we have recognised a sound erudition a very complete synonym of the disease and views very ingenious. The memoir which comes next has not appeared worthy of an honourable mention, and there is no mention here of it but by the report of the remedy which it proposes and which we already know is the sulphuret of potash or the liver of alkaline sulphur. All these memoirs are pointed out in the report, by the number of the arrangement which had been given them by the commission.

It was in effect before the knowledge of the names of the authors, that the report was digested. It is according to the verbal process of the assembly of the commission in which the letters had been opened, and from this verbal process we have adopted the name of each author. At the end of these different prizes, the method is given of administering the liver of sulphur in croup, in hooping cough, and inveterate catarrh. For the author who proposes this remedy, thinks it equally advantageous in all the cases we have mentioned. The commission invokes the talents of all practitioners in tracing the efficacy of this remedy, and it is to aid them in making trial of it, that it has published the extract that follows:—"The author ordinarily mixes the liver of sulphur with honey for use. The dose of this remedy, from the attack of croup to its well marked diminution, is from six to ten grains in the morning and an equal quantity at night. You then reduce the dose, little by little, proportionally as the disease appears to be going off. And in the last days we should not give more than half. Furthermore, it is not the age of the patient, which should determine us to make the dose more or less strong; it is only the degree of danger. The author requires, that the apothecary should send each dose in a vial, well corked; and that the mixture of the sulphur and honey be made at the same moment that the remedy should be taken. According to him, the best manner of exhibiting it to very small infants is to cover a finger with the mixture, and to leave it in the mouth of the infant until it be entirely cleaned. If the patient rejects the remedy, you must administer to him at once a new dose; you may also give it a spoonful of milk or syrup and water, or in short, in a bolus."

M. Royer Collard has given, as we see, the analysis of only six memoirs; moreover, among the rest which have been sent

to the competition, although they have neither obtained the prize nor honourable mention, a great number contain facts or considerations which merit publication. The commission have proposed to the Minister of the Interior, to extract from these memoirs what they contain that is useful, and to give it to the public through the medium of the press. And his excellency has highly approved this useful project, of course we have reason to hope we shall immediately see this new collection appear; and if, as we presume, it is from the same hand as the report of which we have given an account, it will completely answer the design of the minister and of the commission. The edition of the report, which is before us, although issued from the imperial press, presents a great number of errors, of which the principle have been corrected in a list of errata at the end. We understand that a new and more correct one will appear soon, as the first is almost out of print.

French Journal.

Double on Croup.

The Treatise of M. Double, one of those which obtained honourable mention, commences with an exposition of the author's plan, which is followed by a general history of the disease. He then gives an account of the membranous concretions, their organization, physical properties, and chemical composition. The diseases of animals analogous to croup are mentioned. The author makes an analytical and critical examination of the authors, who have written on the complaint. He fixes the name and points out the characters which distinguish croup from diseases which resemble it. Under the head of "clinical considerations," he states the course of the disease, its peculiar characters and its nature. He distinguishes three species of croup:—1st. The catarrhal; 2d. the inflammatory; 3d. the nervous. The catarrhal croup is distinguished from the beginning, by general catarrh and coryza. On the invasion and sometimes during the course of the complaint, there are irregular heats and chills; spitting a great quantity of frothy mucus; a dull pain, or sensation of constraint about the trachea. There is no swelling, no redness either internal or external; on the contrary, a layer of white mucus is often seen in the back part

of the throat. This species prevails in winter and cold seasons. Is the most common of the three. Its course is the least rapid. It has intermissions, which, however, are not so distinct as those in the nervous croup; but more so than in the inflammatory. Its principal symptoms are increased in the evening. In the catarrhal croup, the eyes are languishing and humid; the face is puffed, pale and livid; copious sweats attend it. In this species, the expectoration is most abundant, and is most frequently accompanied with the appearance of membranous concretions.

In the inflammatory croup, the invasion is sudden, violent, and without a precursory catarrh. There is a severe pain in the throat and sensation of heat. The pain is of a pungent, lancinating kind. The difficulty of respiration is great. The cough is violent and the voice has the general character peculiar to croup; but is also more hoarse, sonorous, stridulous. The face is red; pulse quick and hard; there is great agitation of the breast and frequently delirium. The advance of the disease is rapid. It never continues so long as the other species. It is generally terminated by the formation of the membranous concretion, which is often expectorated in consequence of the high excitement of the vital powers. For this reason, the cures of this species are the most frequent; they are also more frequent, because the subjects are usually robust.

The nervous croup is principally distinguished by its disposition to regular periods of exacerbation and remission. The cough is dry and irritating. Pulse small. There are various convulsive motions, and sometimes an opisthotonos. This is the least frequent. It is usually combined with one of the other species, or some other disease.

The membranous concretion is found in the three species, but is to be considered a consequence and not a cause of the disease. This concretion is moist in the catarrhal species, and usually confined to the trachea and larynx, while the bronchiæ are inflamed and filled with a whitish frothy matter. In the inflammatory croup, the membrane extends from the trachea into the branches of the bronchiæ. While in the nervous, it is confined to the trachea and larynx, and is very dry.

Out of two hundred and fifty-two cases of croup, collected from different authors, eighty-six were cured and a hundred and sixty-five died.

The *catarrhal croup* is to be treated:—1. By emetics, especially of ipecacuanha. 2. By dry frictions; frictions with liniments of ammonia; sometimes of ether; blisters. Bleeding, says M. Double, will certainly hasten death in this species. 3. By the carbonates of ammonia and potash. The dose of carbonate of ammonia is ten grains once in two or three hours, in syrup. Calomel and seneka may also be used; but the former, he says, is more proper to prevent the disease, or its paroxysms, than to cure either.

The *inflammatory croup* must be treated by bleeding. First, general bleeding to as great extent as the patient will bear and the inflammatory symptoms demand. Second, local bleeding from the neck by leeches. Then we are to give cooling drinks with nitre, simple or scillitic oxymel: fomentations, emollient poultices to the neck; inhalation of vapours, and the use of the warm bath are proper. Mild and cooling laxatives are proper. Mercury operates too slowly to do good, as the author thinks. He severely proscribes emetics and the partial irritants of the mucous membrane.

For the *nervous croup* we have a list of the common antispasmodics. Frictions with preparations of ammonia are especially recommended.

It is remarkable that M. Double, who seems to have read all the English and American writers on this disease, as well as the authors on the continent, should consider the submuriate of mercury as a medicine of little value in croup, except as a preventive.

New Method of Treating the Itch.

M. Ranque, physician at Orleans, in France, has published a small book on the treatment of the itch, in which he proposes to lay aside the use of ointments and sulphureous medicines. His objections to the common mode are founded on the numerous ill consequences attributed to it by himself and other French physicians of reputation. He adopts that opinion of the nature of this disease, which has of late years become prevalent, viz:—

That it is produced by the propagation of an insect, *pediculus scabiei*. This insect, he thinks, may penetrate to the internal parts of the body, and attack the great viscera. The application of powerful ointments to destroy this animal is supposed to interrupt the function of the skin and materially to impair its healthy action. M. Ranque states that, in the space of three years, three hundred Italians perished in the Hotel-Dieu of Orleans, solely from the effects of the itch. His medicine is prepared in the following manner:

Take, of powder of the grains of stavesacre, half an ounce, extract of the common poppy, two drachms boiled in a quart of water three quarters of an hour; do not express it; preserve it for use and strain it when employed. Sometimes, ten grains of the muriate of mercury are added. This decoction is applied warm in winter. It is to be rubbed thoroughly over the body three or four times a day, with a coarse linen rag, in such way as to break the pimples. It requires to be repeated from six to twelve days, successively. The author states, that M. Corvisart, Larrey, Richerand, and others, think well of this method.

Thermometers.

It is very desirable that the learned of all countries would unite in adopting the same scale. At present it is necessary to reduce the scale of one thermometer to that of another.

The scales of Fahrenheit, Reaumur and Celsius are easily compared; knowing that 180° Fahrenheit $= 80^{\circ}$ Reaumur, $= 100^{\circ}$ Celsius. According to this 18° Fahr. $= 8^{\circ}$ R. $= 10^{\circ}$ C. and 9° F. $= 4^{\circ}$ R. $= 5^{\circ}$ C.

$$1 \text{ degree R} = 2\frac{1}{4} = \text{F} = 1\frac{1}{4} \text{ C.}$$

$$1 \text{ do } \text{F} = 9\cdot4 \text{ R} = 9\cdot5 \text{ C.}$$

$$1 \text{ do } \text{C} = 1\cdot5\cdot2 \text{ F} = \text{R.}$$

The thirty-second degree of Fahrenheit, which marks the freezing point, corresponds with Zero in the scales of Reaumur and Celsius. The 212th degree of Fahrenheit, which marks the boiling point, corresponds with the 100th degree of Celsius and the 80th degree of Reaumur.

New Chemical Sect.

Winterl, professor of Chemistry, at Pest, in Hungary, published a book, called "Materials for the Base of a Chemistry for the 19th century."

The principle he makes use of is *azote*, or the base of azote, to which he gives the name *andronia*.

The *andronia* is obtained from the residuum of the detonation of nitre with charcoal and the lye of ashes, exposed in a cellar to saturation with carbonic acid. Scheele and Pelletier have taken this for silex.

When the lye is saturated, the *andronia* is separated by filtration.

The author attributes many marvellous properties to this substance.

It neutralizes all the bases, unites with the acids. With vital air it forms vital air, azotic gas, and nitric acid, according to the proportions of water and the principle of acidity. With hydrogen it forms milk and albumen. United with lime it forms, according to the proportions, either potash or silex. It renders magnesia insoluble in the acids, and mercury soluble in water. It converts lead into barytes, copper into molybdena, and iron into steel.

M. Guyton Morveau and M. Bucholz have repeated the experiments of Winterl, without obtaining the same results.

The Institute of France caused the *andronia* to be analysed and found it to consist of much silex, with a little lime and oxide of iron.

M. Malte-Brun, a distinguished philosopher speaks thus, of this subject: A certain sect of philosophers, who for ten years have made much noise in Germany, and who flatter themselves with having discovered the true system of the physical and moral universe, took up this pretended discovery of M. Winterl with the hope of making it the basis of a new system of chemistry, containing the most abstract and mysterious propositions. An unlucky accident has dissipated the hopes of the *philosophers of nature*; the most celebrated chemists of France have demonstrated by authentic analyses, that the pretended new substances of Winterl were nothing more than a mixture of elements al-

ready known. The *philosophers of nature* maintain that their system will continue, notwithstanding the disappearance of the new base.—*Klaproth, Dict. de Chimie.*

On the good effect of Ipecacuana and Laudanum in Dysentery.

Half a drachm to a drachm of ipecacuanha with from thirty to sixty drops Tincture Opium were given, confining the patient for some hours to an horizontal posture. It usually happened, that after the medicine was taken, no inclination for stool was experienced for many hours; the patient being, during that time, free from pain; several loose motions then took place, but unmixed with blood and without tenesmus. It sometimes happened that several loose motions succeeded the medicine in a very short time, and none afterwards; and that the bowels were even costive the day after the medicine had been taken.

Seldom more than one dose was required, but when any symptoms remained, a repetition next day was sufficient to cure the disease. This treatment was adopted at the commencement of the disease; afterward it was not beneficial, because the stomach became too irritable to retain the medicine.

Medical and Physical Journal.

Aneurism of the Carotid Artery.

The distinguished surgeon, Dr. Post of New-York, has lately performed the operation for an aneurism of the carotid artery with success. The tumour was situated immediately below the angle of the jaw, was six inches long and four broad. An incision was made between the tumour and the clavicle three inches long. The muscles being dissected and the sheath of the vessels opened, the artery was separated from the vein, and par vagum. Two ligatures were passed under the artery three quarters of an inch apart, and being tied, the artery was divided between them. A needle was passed through the cut extremity of the lower portion and a ligature made in the end of the vessel. As soon as the first ligature was applied the pulsation in the tumour ceased. The patient suffered but little the first day; afterwards

he was attacked like Mr. Cooper's first patient with a violent cough. The ligatures came away in about eighteen days. The tumour gradually diminished. The healing process was retarded by the formation of a sinus in the neck, which was cured, and the patient discharged, about four months after, the operation.

Lip Restored.

A very interesting operation has lately been performed by Mr. Lynn on a man, who had lost the whole of his under lip, by a cancer. The operation was conducted on the Taliacotian principle of restoring a lost nose, by means of the adjacent skin being raised from the flesh, and after being folded over, made to form the part required, taking care to preserve the circulation. In this instance the skin was brought up from the throat, and the lip is so well formed, that the pronunciation even of the labial sounds is perfectly distinct.

Medical and Physical Journal.

College of Medicine.

The legislature of this state have granted the sum of \$20,000 to Harvard University for the purpose of enabling them to erect an edifice in the town of Boston, for the medical lectures and other important objects connected with medical instruction.

The government of the University have taken measures for carrying into immediate effect the liberal intentions of the legislature.

Of the Sudden and unexpected Deaths in the Acute Rheumatism.

Probably every physician of long and extensive practice in this country, has had occurrences of death, in the acute rheumatism, after being in a state of delirium for a few hours, or sometimes instantly, without any symptoms of disease previously. In such cases of late, there has been found, on dissection, inflammation of the heart; and however inexplicable the sudden death may be from this morbid state, still many persons are dis-

posed to believe that there is some connection between them ; especially as, in some instances, the symptoms of affection of the heart does subsist for several days, or longer before death. In the gout, sudden and unexpected deaths occur still oftener than in the rheumatism ; but inflammation of the heart, perhaps, has not been noticed, which, however, is quite as likely to occur, and be the occasion of the fatal termination, as in the other disease. Inquiry by dissection is wanted to ascertain this point.

Edinburgh Med. and Surgical Journal.

Of different kinds of Fen Miasmata.

The marsh fevers and the disease of sheep called the rot, often prevailing at the same time, in the same kinds of wet land, Dr. Harrison concluded, that the occasional cause was similar for both diseases. That this is not the truth, is proved by the absence of the disease of sheep in some of the most infested districts with fevers. The marsh of Chitney, near Rochester, is one of the best sheep pastures in England ; the rot never occurs in it, but it is really uninhabitable, on account of its producing intermittent and remittent fevers. This fact seems to show, that there are different kinds of miasmata in fens ; also Dr. Harrison has lately proved, that the *rot* is not occasioned by any kind of herb eaten by the animals, for they became diseased with the rot, although they were secured against the effects of grass food by muzzling them.—*Edinburgh Medical and Surgical Journal.*

Literary.

Bradford & Read are preparing to put to the press the Dissertations on Simple, Intermitting, Continued, Irregular Intermitting, and Irregular Continued Fever ; by the late George Fordyce, M. D. F. R. S. Fellow of the Royal College of Physicians, Senior Physician to St. Thomas's Hospital, and Reader on the Practice of Physic in London. From the last London edition of two volumes, in one volume octavo.


TO CORRESPONDENTS.

A communication has been recieved from Dr. John Warner of Florida, in New-York, on the epidemic, which has there prevailed.

Abstract of the BILL OF MORTALITY for the Town of BOSTON,

From the 31st of December, 1812, to the 1st of January, 1814; agreeably to the Record kept at the Health Office.

		Under 1 y.		1 to 2		2 to 3		3 to 4		4 to 5		5 to 6		6 to 7		7 to 8		8 to 9		9 to 10		10 to 11		11 to 12		12 to 13		13 to 14		14 to 15		15 to 16		16 to 17		17 to 18		18 to 19		19 to 20		20 to 21		21 to 22		22 to 23		23 to 24		24 to 25		25 to 26		26 to 27		27 to 28		28 to 29		29 to 30		30 to 31		31 to 32		32 to 33		33 to 34		34 to 35		35 to 36		36 to 37		37 to 38		38 to 39		39 to 40		40 to 41		41 to 42		42 to 43		43 to 44		44 to 45		45 to 46		46 to 47		47 to 48		48 to 49		49 to 50		50 to 51		51 to 52		52 to 53		53 to 54		54 to 55		55 to 56		56 to 57		57 to 58		58 to 59		59 to 60		60 to 61		61 to 62		62 to 63		63 to 64		64 to 65		65 to 66		66 to 67		67 to 68		68 to 69		69 to 70		70 to 71		71 to 72		72 to 73		73 to 74		74 to 75		75 to 76		76 to 77		77 to 78		78 to 79		79 to 80		80 to 81		81 to 82		82 to 83		83 to 84		84 to 85		85 to 86		86 to 87		87 to 88		88 to 89		89 to 90		90 to 91		91 to 92		92 to 93		93 to 94		94 to 95		95 to 96		96 to 97		97 to 98		98 to 99		99 to 100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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 *The Deaths above were caused by Diseases and Casualties, as follows :*

1	Cholera	3	Dropsy	17	Fever, putrid	1	Infantile Diseases	206	Quinsy	8
1	Cholera Infantum	2	Dysentery	5	do typhus	38	Jaundice	5	Sudden	11
15	Consumption	193	Erysipela	1	Fits	10	Mortification	7	Suffocation	1
2	Convulsions	11	Fever, bilious	6	Gout	1	Nephritis	1	Still Born	36
1	Croup	1	do inflammatory	3	Hæmorrhage	1	Neurosis	1	Teething	2
2	Dyspepsia, or In- digestion	1	do pleurisy	7	Hooping Cough	1	Old Age	48	Diseases not men- tioned	39
1	Dyspepsia	1	do pulmonic	41	Hydrocephalus	2	Palsy	6		
9	Drowned	15	do puerperal	5	Hydrops pectoris	2	Poison	1		786

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[No. III.

OBSERVATIONS

ON THE NATURE OF AN EPIDEMIC DISEASE, WHICH HAS PRE-
VAILED FOR A FEW YEARS PAST IN THE NEW-ENGLAND
STATES, AND THE STATE OF NEW YORK.

By Dr. John Warner.

[To the Editors of the New-England Journal, &c.]

Florida, Montgomery County, N. Y.

IT is now several years since the attention of physicians in many parts of our country has been excited by the appearance of epidemic diseases which have spread through many towns and villages;—in some of which they have been attended with an alarming mortality.

In the year 1806, an epidemic disease (which has since obtained the name of *Spotted Fever*) made its appearance in Medfield, (Mass.) Since that period, it has spread through many parts of New-England and of the state of New-York.* In the beginning of the year 1812, a disease assuming a different form from Spotted Fever, though not less malignant, appeared as an epidemic in the town of New Milford, (Conn.) From this place

* See North on Spotted Fever.

the disease spread to many of the neighbouring towns. In some of them it raged with all the violence of a destructive *epidemic*; in others it was less malignant. This epidemic continued to rage with unabating violence until the fore part of April, from which time it gradually declined, until the beginning of June, when it entirely subsided.

The weather which preceded this epidemic it will be recollected was extremely variable; at some times uncommonly warm for the season, and then changing suddenly to the most extreme cold. I have been informed by a gentleman in that neighbourhood, whose observations were made by a thermometer, that there were more cold days in this than in any former winter for many years. It will also be recollected that there were many storms of rain and snow, particularly of the former. Many of the storms were attended with violent winds, which rendered them much more severe. The frequent storms of rain, and the warm changes which also happened frequently, dissolved the snows; in consequence of which the surface of the earth was almost constantly wet. The inhabitants were consequently not only exposed to the sudden changes of the temperature of the atmosphere, but also to the uncommon wetness of the season. These causes seem to have produced catarrhal affections in many, previous to the appearance of the epidemic symptoms of the Epidemic.

In some cases, for several days previous to the attack of the disease, the patient felt a degree of languor and debility; but in most cases the attack was very sudden. The disease was commonly ushered in by a cold stage of considerable length: in some of these cases the patient did not complain of cold, though the temperature of the surface was much below that of health; in other cases the rigors were severe. In some cases the coldness of the surface continued until the temperature was raised by artificial means; in others it was succeeded by an increase of temperature, which is unequally diffused over the surface—the head and trunk being warm, while the extremities remain cold. The face is sometimes pale and cadaverous, but it is more commonly flushed. The eyes are red and suffused with tears; they have a peculiar wildness, and sometimes a kind of vacant stare. Respiration is laborious, anxious, and almost convulsive, but usually less painful than in pneumonia.

A cough is commonly among the first symptoms ; it is sometimes attended with expectoration of viscid frothy matter, but in more violent cases the matter expectorated has a bloody appearance, is very florid and entirely dissolved. Very early in the disease a pain is felt in some part of the thorax ; sometimes it is severe, but usually it is more a sense of oppression on the chest, a distress (as the patients have called it) rather than acute pain. The sudden and great prostration of strength, which takes place at the commencement of the disease, may also be considered a prominent symptom. Nausea and vomiting are not uncommon symptoms. The matter evacuated, whether the vomiting be spontaneous or excited by medicine, is more or less bilious. The tongue is usually covered with a white or yellowish coat, while its edges are of a bright red. The pulse is not much more frequent than in health, frequently less so ; it has a peculiar feel—is weak, soft, tremulous, somewhat convulsive in its action, and frequently intermitting. It is sometimes full, but always easily compressible, yielding to the slightest pressure of the finger. I have never observed the thirst to be very troublesome. The urine is scanty and high coloured, and strangury frequently takes place. The bowels in general seem rather costive. The intellects I believe are seldom disordered at the commencement of the disease.

As the disease advances, most of the symptoms become aggravated. The respiration is more laborious, the countenance becomes livid; the tongue is covered with a dark coloured coat or presents a bloodless appearance, the pulse grows more feeble and intermits after every four or five strokes; the extremities grow more cold, the lungs seem choaked with matter which cannot be expectorated, a hiccup takes place, the breathing becomes stertorous, and the patient sinks in the arms of death.

I have described the most common form of the complaint, from the attack to the fatal termination.

If the disease terminate favourably, it is *usually* before the eighth day. The face now presents a yellowish appearance, as if from the absorption of bile.

It may be proper to observe here, that as the symptoms of the disease become more alarming, the strangury abates. On the contrary, when the other symptoms abate, the strangury often continues a troublesome, though by no means a dangerous symp-

tom. In a few cases the cough has been absent, though there was evidently much affection of the lungs: I have seen two cases of this kind, both of which terminated fatally. In females the disease is sometimes attended with symptoms of hysteria. In a few cases the disease has fallen on the throat, producing all the symptoms of Angina Maligna. At the same time that this epidemic prevailed, many persons were affected with a disease of the head, in which the pain was very severe. These cases were attended with febrile symptoms, and generally terminated from the third to the fifth day, either by resolution or by suppuration. In the latter case a quantity of matter is discharged from the nose or ears.

In some other towns the disease has been attended with bilious symptoms. Some cases have, from the commencement, been attended with a bilious diarrhea, with stools extremely fetid and of so acrid a quality as to excoriate the parts with which they come in contact. Such have been the symptoms of the disease (at least so far as I have been able to observe) in several towns in Connecticut, in the year 1812 and beginning of the year 1813. Since that period I have had many opportunities of observing the symptoms and progress of the disease. These observations have been made in the town of Florida (county of Montgomery and the adjacent towns. I have little to add to the foregoing description of the disease, except that in the last mentioned places the symptoms were generally less urgent and the prostration of strength less considerable than in the cases described.

On examining the body of a person who had died of the disease by dissection, the following were the morbid appearances observed:

In the thorax the whole substance of the lungs, except the upper lobule of the right lobe, were found in a complete state of gangrene. The cellular texture was filled with an effusion of black grumous blood. On the right side, to which a blister had been applied, was an effusion of coagulable lymph. No other morbid appearances were discovered in the thorax, unless we should enumerate as such the unusual quantity of slime which covered the several viscera of the thorax and abdomen.

The abdominal viscera appeared sound with the exception of the omentum on which were found gangrenous spots.

It had been expected that the liver would be found in a diseased state—in this we were disappointed: no morbid appearances were discovered on this organ. The gall-bladder contained a small quantity of bile which appeared of a healthy quality. As no affection of the head appeared in the course of the complaint, the brain was not examined.

It is proper to observe that this dissection was performed in a few hours after death.

In forming our prognosis in this-insidious disease, much caution is requisite; as the threatening symptoms often seem to abate, when in a few hours another paroxysm puts a period to the life of the patient. In such cases death is supposed to be occasioned by an effusion into the cellular substance of the lungs.

Treatment.—In prescribing for the disease under consideration, particular attention should be paid to the indications of the pulse. At the same time the constitution and former habits of the patient should be carefully considered.

From these circumstances we are to determine on the propriety of blood-letting. I believe that the inflammatory appearance of the eye, the redness of the face, or the difficult respiration should have little influence on our minds as respects the propriety of employing the lancet.

This remedy I have no doubt is of service in many cases of the disease, where the attacks are slight and the tensivity of the pulse evident; but in the more violent cases I believe it is seldom proper, and in very few cases (if I may trust my own experience) should the operation be repeated.

If the temperature of the patient is found below the standard of health, the warm bath may be employed with advantage; it should be regulated agreeable to the rules prescribed by Dr. Currie. After the employment of the bath, the warmth of the patient may be supported by the application of external heat, should that be necessary. I believe however that the temperature should never be raised by artificial means above the natural standard of health.

If there be oppression of the stomach, as is commonly the case, an emetick is to be administered. This not only evacuates the contents of the stomach and commonly produces moisture on the skin, but by the concussion it gives the system, may perhaps dissolve the morbid catenation, and break the force of

the disease. To the latter I am disposed to attribute much of the good derived from emetics.

Much depends on our choice of emetics. In two cases antimonials seem objectional, as they are more violent, and far less manageable in their operation than ipecacuanha. The latter medicine should therefore generally be preferred in those cases, while in those attended with less debility, antimonials may be preferable. The sulphat of zinc has sometimes been employed; and in cases of great debility, or where we wish the medicine to operate speedily, it may perhaps be preferable to either of the former. In my own practice I have, with a few exceptions, employed the ipecacuanha, and think that in most cases it answers every intention which we are to expect from emetics.

The next class of medicines I shall mention is Epispastics. They should be applied early in the disease, and as near the seat of pain as possible. It is better to repeat the blister than to attempt to keep up the discharge from the first one. Sinapisms are also to be applied to the feet and sometimes to the wrists.

The effect of a large blister is generally to relieve the distress and difficult breathing. It has sometimes been judged advisable to lay a large sinapism on the breast, previous to the application of a blister. The relief obtained by this practice is more speedy, than when the blister is applied without the sinapism.

As soon as the effects of the emetic are sufficiently over, expectorants and sudorifics are to be employed. Of the first class of medicines, the root of liquorice—elecampain and seneca and the Sem. Serapis are to be made use of: in my own practice I have preferred the latter. I have given it in the form of mustard whey, prepared agreeably to the directions given in the American Dispensatory. The Seneca root is also a valuable remedy, and I think much preferable to liquorice; combinations however of the three first named expectorants may be employed with advantage. Antimonial expectorants I believe will not often be advisable or even safe.

The symptoms of the patient must determine us what kind of sudorifics are to be employed. The preparation of Dr. Dover has often been employed with advantage. In low cases, it has sometimes been thought advisable to omit the neutral salt, and substitute about half the quantity of gum camphor. In cases of

greater vascular excitement, the quantity of neutral salt is sometimes increased. Calomel has frequently been added to the above sudorific composition, not only to assist its operation, but to answer the important purpose of exciting a new action in the system; but of this we shall speak more particularly in another place.

In many cases it is advisable to assist the operation of the diaphoretic powder with warm drinks. An infusion of pennyroyal or the leaves or flowers of thoroughwort (*eupatorium perfoliatum*) answers this intention perhaps better than most other articles. These articles should never be employed, when the temperature of the patient is above the healthy standard: the same rule should be observed in the application of external heat.

I have been the more particular in these remarks, as I think I have seen much injury result from the indiscriminate application of external heat, and the internal use of heated drinks.

The same rules should be observed in the administration of all stimulating medicines. In many cases they may be indispensably necessary. The excitement of the system should at all times be supported;—but, unless I am much mistaken, it should never be raised by artificial means above that of health.

Much may depend on our choice of stimulants. In my opinion, the more permanent stimuli (provided they answer our intention) should be preferred. The diaphoretic preparation before mentioned (varying the proportion of the several articles as the symptoms may require) is perhaps one of the best medicines of this class: to this we may add the mineral acids, particularly the nitric, bitters, wine, porter, and gum-guaiacum, should they be necessary.

I do not say that the more diffusible stimuli are never necessary—undoubtedly they are; but the proportion of cases in which they are required is, I believe, very small.

A few observations on the use of cathartics are necessary. In mild cases of the disease, pretty active cathartics are commonly of essential service. Jalap and Calomel answer the purpose very well—the dose required is commonly pretty large. In more violent cases rhubarb should be substituted for jalap, and the operation of the medicine carefully watched; while in the most violent forms of the disease, the administration of cathartic remedies is attended with considerable hazard. The bowels should be kept open by injections; and should a cathartic be-

come necessary, those of the mildest kind should be employed. I have known a hypercatharsis, induced by an active cathartic, which proved fatal to the patient.

We may observe generally, with respect to the evacuations of bleeding and purging, that patients of robust constitutions and regular habits (other circumstances being alike) bear them much better than those of a contrary description.

The foregoing is an outline of the practice which I have pursued, and which I have the satisfaction of stating has been generally successful.

The following theory of the disease, it is hoped, may explain, in a satisfactory manner, most of its phenomena.

From the symptoms of the disease, and the appearances on dissection, the lungs appear to be the primary seat of the complaint. In searching for a cause of the disease, we are disposed to attribute much to the extreme coldness and the sudden changes of the season.* These changes, which we have before observed were great and sudden, might of themselves be sufficient to produce disease in persons exposed to their influence; but the warm changes and the storms of rain, by melting the snow on the earth, have much exposed the inhabitants to wet feet, and thus contributed to increase the effects of cold on the system.

According to Dr. Cullen, the circumstances of the cold applied, which give it effect, are—"1st, The intensity or degree of the cold; 2d, The length of time during which it is applied; 3d, The degree of moisture at the same time accompanying it; 4th, Its being applied by a wind or current of air; 5th, Its being a vicissitude or sudden and considerable change from heat to cold." All these circumstances have existed, and to these we may add another, perhaps no less productive of disease, viz. the sudden changes from cold to heat. Under such circumstances, the whole animal system must become debilitated, but the lungs must suffer in an eminent degree.

* The constant application of cold is a powerfully debilitating agent in the human body. It appears from President Fitch's letter to Dr. North, that the summers of 1809 and 1810 were considerably colder than the five preceding. Whether the two succeeding summers were equally cold, I have not been able to ascertain; were this the case, it might be considered as a debilitating power, which might predispose to disease.

These viscera, destined to perform the important function of respiration, are of a spongy texture, containing many cells for the reception of the air, composed and united together by cellular membrane. According to Richerand, the lungs present a surface to the air, equal to the whole cutaneous organ. On this surface a great number of exhalent vessels pour out their fluid. From this surface too (if we may trust the observation of the same author) a prodigious number of absorbent vessels arise. The ramifications of the pulmonary artery are also spread on these membranes. Haller considers the coats of the aerial cells but the millionth of an inch in thickness; and Richerand, who quotes his observation, remarks, that as the ultimate ramifications of the pulmonary vessels are spread on their parietes, the blood is almost in immediate contact with the air.

When we consider the extreme minuteness of these pulmonary blood-vessels, and the still greater minuteness of the absorbent and exhalent vessels, and at the same time consider their great exposedness to the external air, it being received several times in a minute, and applied to them over so large a surface, and on membranes of such extreme tenuity, we may well suppose them to be greatly affected by the different changes which take place in the temperature of the atmosphere. It is possible that the pulmonary vessels may be injured by the abstraction of the necessary stimulus of heat, provided the cold be intense and of long duration. But however this may be, their excitability must be accumulated by the deprivation of their usual stimulus of heat. If now the person enter a warm room, where the temperature is suddenly raised, perhaps fifty degrees or upwards, these minute vessels (which according to Mr. J. Hunter carry on their own circulation almost independent of the action of the heart*) are exposed to a stimulus too great for them to bear; in their present state of accumulated excitability, an excessive action is the consequence, and those vessels become debilitated from over action. Whether the pulmonary capillaries lose their tone in the former or latter way, the effect would be nearly the same.

If the exhalents and absorbents have lost their tone, the latter do not take up the fluid which is poured out in the lungs; and

* Mr. Hunter's work is not before me, the observation is quoted from memory; but is believed to be substantially correct.

at the same time it is probable, that the exhalents pour out a greater quantity of fluid than usual: hence cough, expectoration, difficult respiration, ill oxydation of the blood, &c.

If the injury extend to the sanguiferous vessels, the circulation in them is impeded, and a congestion is the consequence. As the blood is propelled forcibly into these vessels, some of them are ruptured; their blood is poured into the cavities of the lungs, and raised by coughing: hence the bloody expectoration which has sometimes attended. In this case the blood is imperfectly oxydated, partly from the effusion in the lungs, and partly from the diseased state of the blood-vessels.

In proof of our opinion that the blood is in a state of imperfect oxydation, we may cite the authority of Mr. J. Bell. "These then" says he "are the marks of ill oxydated blood: a livid colour, coldness which nothing can remove, oppression and anxiety of the breast, palpitation and difficult breathing, &c." The following quotation from the same author may serve to strengthen our opinion of the nature of the disease. "In peripneumonia notha" says he "there is not merely an inflammation of the pleura, as the name expresses, but of the lungs themselves; and it is not from inflammation, pain, fever, or acute suffering, that they die, but because the lungs are entirely crammed; the heart can no longer move; they are not sensible of their dangerous state, but are suffocated in a moment and die without a groan."

"When this disease comes upon a place, it comes with all the frequency and destruction of an epidemic disease; and the sudden and unexpected deaths are terrible."

"The pulse is weak; the cough slight; the difficulty of breathing more anxious than painful; the face sunk in the features, and flushed, or rather of a livid colour, except when it is cadaverous, pale, and sallow. The suffocation is sudden: the lungs have, as Morgagni expresses it, a liver-like, solid consistence; they have no longer the cellular appearance of lungs, for their bronchia are crammed with blood; their common cellular texture is also full of exuded blood; they are dense, solid, and very heavy and black, and they sink in water like the lungs of a fœtus. The heart is so curbed in its actions, that it gives but a small, feeble, and trembling pulse," &c.

It will hardly be doubted, that Mr. Bell has described a disease similar to the one under consideration.

Such being the diseased state of the system, we offer the following explanation of the symptoms. The cough, difficult breathing, expectoration, and ill oxydated blood, have already been mentioned.

1st. The circulation in the lungs is impeded, but not totally obstructed ; for under such circumstances life could not be supported a moment, unless there be a communication between the heart of the lungs and the aorta. A large portion of the pulmonary vessels are, however, probably diseased : in some of these the blood may circulate languidly, in others not at all. The blood is consequently accumulated in the pulmonary arteries, then in the heart of the lungs ; and as this organ cannot transmit the blood through its arteries as in health, so it cannot receive it from the veins. It is consequently accumulated in these vessels, and being as before observed in a state of imperfect oxydation, it gives to the face a livid appearance. Now in the same proportion, as the blood accumulates in these parts of the sanguiferous system, the remaining parts are deprived of it. The heart of the body therefore does not receive its usual supply, and contracting on a small quantity of blood, gives a feeble, tremulous pulse ; and as the disease advances, and the heart of the body receives a still less supply than at first, the quantity is often too small to excite the heart to action ; the auricle therefore has to discharge itself a second time into the ventricle, before the latter contracts—hence the pulse intermits. It is probable also, that in accounting for the feeble action of the heart, much may be attributed to the quality of the blood.

We are aware that Mr. Bell has attributed the feeble action of the heart to its being “curbed in its actions.” This explanation however cannot be admitted, when we consider that it is the heart of the lungs which is thus curbed in its actions, while the heart of the body has complete liberty to act, if it were sufficiently stimulated. The following observations of Mr. Bell will be sufficient to decide the question : “Thus we not only know that we can excite the heart by accumulating blood in it, but that by confining the blood in it we can carry that excitement to a very high degree ; and in short by keeping the one or the other ventricle incessantly full of blood, we can make the

one heart work continually, while the other lies quiet, or is only slightly drawn by the other's motion, showing the true distinction between the heart of the body and the heart of the lungs."

"And this is a memorable fact, that it is not merely the stimulus of the blood, but the sense of fulness that makes the heart contract; for the auricle often beats twice or thrice, sometimes it makes its push four or five times before it can force the ventricle to contract."—*Anatomy*, p. 28.

2dly. A number of the symptoms which have characterized the disease are the natural effects of illoxydated blood. Several of these have already been mentioned; but there are others of more serious importance: every organ suffers in consequence. The heart indeed sends blood to them, but their quantity is less than usual, and it is destitute of that principle which is necessary for their support; their functions are therefore deranged or suspended. The brain, from the delicacy of its texture, would be the first to suffer from this cause; and from its importance in the animal system, its injuries would be most severely felt. To this cause we may attribute the stupor and low delirium of some patients. Probably most of the symptoms are aggravated by this cause.

The bilious symptoms are now to be mentioned. Mr. C. Bell observes, "It is almost universally concluded, that the secretion of bile is made from the blood of the vena porta. The blood conveyed in this vessel may be supposed to possess venous qualities in an eminent degree, and from this cause to be the fitter for the formation of bile. Mr. Abernethy indeed has related a case, in which no vein entered the liver. In this case bile was secreted, but it was less acrid and bitter than common healthy bile. Now in this state of disease the whole mass of blood may be supposed to possess venous properties in a much greater degree than in health; and if so, the proportion contained in the blood of the vena porta will also be increased in an equal ratio. Now if, from the blood of the vena porta in a state of health, bile of a more acrid quality is secreted, than can be formed from arterial blood, we may conclude that its quality will be still more acrid, if the blood from which it is secreted contain a larger proportion of venous properties. We may conclude also that the quantity will be greater, unless the action of secretion be lessened, and this we think will be increased by the stimulus of this

kind of blood, unless the action of disease be such as to suspend that of secretion.

If such be the nature of the complaint, the most powerful means are to be employed. In offering our opinion of the treatment, we omitted speaking of mercury till we had spoken of the nature of the disease; we think it useful in all violent cases. Dr. Cullen says "it acts as a stimulus to every sensible and moving fibre of the body, and it produces the most permanent excitement." Such a remedy we think admirably suited to the disease we have described. To assist the operation of the calomel before directed, the fumes of factitious cinnabar may be inhaled. Perhaps this may produce a good effect from being applied to the diseased part; but, by suddenly affecting the salivary glands, it assists in bringing on the same action through the system. Where a mercurial action could be effected in the system, we have never known a case terminate fatally.



AN ABSTRACT

OF MR. ABERNETHY'S TREATISE ON THE CONSTITUTIONAL ORIGIN, AND TREATMENT OF LOCAL DISEASES.

THE reputation of Dr. Ferriar and Mr. Abernethy is so well established, that it is unnecessary to advert to that for a motive, for presenting the following brief analysis of some of their treatises, to the readers of this Journal. It is undertaken simply with a view to their practical utility, which the scarceness of these works at present renders very limited. The paper of Mr. Abernethy referred to, is entitled "Surgical Observations on the Constitutional Origin and Treatment of Local Diseases."

It will be unnecessary, in the following account of this treatise, to fill the pages with quotation marks or references. Passages deemed most striking will be thus distinguished. And as the whole object of this article, is to give a condensed account of Mr. A's views, theoretical and practical; as free use will be made of his *language* as of his facts and reasonings, this general acknowledgement, if one be necessary, is deemed fully sufficient.

To Mr. Hunter's Treatise on the blood, &c. we are referred as almost the only source, for any satisfactory account of those febrile and nervous affections which local disease produces, while it appears that the reciprocal operation of constitutional disorder upon local disease, has obtained still less attention. To investigate more particularly some parts of these subjects is the object of Mr. A's inquiry.

From that consent of the whole constitution with its parts, or that universal sympathy which obtains throughout the body, results this general axiom, that a considerable local disorder shall produce correspondent derangement in other parts of the system. Some functions, however, are found to be more disturbed than others, and on this are founded the distinctive appellation of diseases. Thus, disturbance in the sanguiferous system, and unusual variation in the temperature, have been denominated fever; convulsions and tetanus take place when the functions of the muscular system are more particularly deranged, and so of others. Now, in these and other similar diseases, it must be recollected, that the whole constitution is disturbed, although certain parts from peculiar circumstances are chiefly affected.

It has long been observed, though with no very precise practical point in view, that the digestive organs are disturbed by disease and injuries of other parts. Thus, sprains of tendinous or ligamentous parts produce sudden sickness; and Mr. Hunter has attributed that shivering which attends some diseases, and is subsequent to injuries, to the state of the stomach. The stomach, in fact, has, in some local injuries from accidents or operations, been the organ principally affected; and among the most important and interesting parts of this Treatise, are those devoted to the investigation of the sympathies of this organ. The following case is very much in point:

A man, the subject of adherent omental hernia, submitted to an operation for its removal, in order to be relieved from the inconveniences and apprehension the disorder occasioned. He had been purged, to be prepared for the operation. The operation being performed, general constitutional derangement followed, manifested by a full and strong pulse, furred tongue, great anxiety, restlessness, and total want of sleep. The stomach was particularly affected, being distended, uneasy on compression, and rejecting every thing that was swallowed.

The usual treatment in constitutional irritations was resorted to in this case, but with scarcely any relief. The tongue, on the second day, was still covered by a thick yellow fur; the skin was hot and dry, and the pulse frequent. The second night was passed without sleep. Purgatives with calomel were now liberally administered, without effect. The third night was passed like the second, without sleep, and in great anxiety. The next morning two pills, containing five grains of the pil. colocynth. and the same quantity of the pil. aloet. cum myrrha, were given every fourth hour; again he passed a restless night; but between five and ten next morning, he had twelve copious, fetid, and black evacuations, and he had several others in the course of the day. After which his appetite returned; his tongue became clean, and a sound, continued sleep succeeded.

It can scarcely be questioned, that in this case the chylopoietic organs were the parts chiefly affected. The diseased state of the stomach was pointed out by sickness, tenderness, aversion to food, and *state of the tongue*. The insusceptibility of the bowels to the action of medicines, which ordinarily excite them, and the subsequent profuse discharge mark their disorder, while the black colour of the discharges shew, that the secretion of the bile was not healthy, and that the liver sympathized with its neighbouring organ. The restlessness may further, very naturally be attributed to the state of the chylopoietic viscera, since it was relieved by a renewal of secretions into them.

Numerous cases might be related to prove, "that local irritation, acting on the nervous system, may affect the digestive organs in a very serious manner, and thereby create great general disorder of the system, which is afterwards alleviated in proportion to the amendment that ensues in the state of those viscera;" and on the treatment, Mr. A. observes, "In many instances opium will not prevent continual efforts to vomit, yet, when by magnes. vitriol. or purgatives administered in the form of pills and clysters, stools are procured, the vomiting ceases, the stomach retains both food and medicine, and general tranquillity of constitution is suddenly restored."

Effects of the same general nature, but differing only in degree, will be produced by similar causes. Whether the rationale of their operation be strictly true or not, will have no influence on the practice of this author, it is clearly inductive;

and a successful practice will ever cover great speculative errors.

Persons who have what is called a weak irritable state of the nervous system, are very liable to a similar derangement of the digestive organs, and these may be disordered by improprieties of diet. These slight affections are characterized by the usual symptoms of dyspepsia. The state of the tongue is then particularly described :—"The tongue is dry, whitish or furred, particularly at the *back part*, this symptom is most apparent in the morning. The fur is greatest at the back part, and extends along the middle of the tongue to the tip, the edges remaining clean." Other symptoms are a tenderness when the epigastrium is compressed, the respiration peculiar, performed more by the ribs than the diaphragm, turbid urine, and at times moderately good appetite ; at times it is inordinate. The bowels alternately costive, and lax even to purging ; at times, the urine is pale and copious as in hysteria. Except this local complaint, patients thus situated, commonly declare themselves in good health ; at times, however, the mind is irritable and desponding, sleep disturbed, and not refreshing when sound ; slight noises will cause them to start, and they will call themselves very nervous. It has happened from directing the attention, in these cases, to the whole constitution, by attempting to restore health to the digestive organs, that most happy results have been brought about, in a time astonishing to the patient, who has long been viewed and treated as suffering merely some local disease.

To the tongue we are to look as affording, in general, an infallible criterion of a disordered state of the stomach. Where no febrile complication exists, the change which takes place in this organ can only be imputed to local disease, or a participation in a disorder of the stomach or lungs ; and ever where fever exists may not the especial disorder in its secretions, although they may partake of the general disturbance, be attributed to the state of the stomach ? The state of the tongue may not point out the kind and degree of the disorder of the stomach, and in recent cases of severe dyspepsia, its appearances may not be so strikingly unhealthy as in more confirmed cases. But it is probable, that continued irritation may render unnatural secretions habitual to the part, that these may exist independently of their original cause, " nay, sometimes the cu-

icle of the tongue seems to have lost its natural transparency, and to become permanently white in consequence of continued irritation."

The tongue should in recent slight cases be examined in the morning; at this time it will be found much furred, particularly at the part next the throat. The reason for this advice is, that this fur will be removed in the course of the day, by the actions of the organ, and the practitioner deprived of a very important diagnostic. If the secretions of the tongue be thus disordered, those of the stomach may be inferred to be in the same state; and as digestion is the consequence of healthy secretions of this organ, that process must be disturbed in proportion as its secretions are deficient or vitiated. The actions of the kidneys are also disordered by the affections of the digestive organs, hence we are referred to the urine as another evidence of their diseases, and it has been said to be turbid, to differ in quality, colour, &c from healthy urine.

Disorders in the chylopoietic organs, farther, are strikingly indicated by an unnatural colour and odour in the fæcal discharge from these organs. To Mr. Abernethy the colour of the fæces seems generally to depend on the kind and quantity of the bile. In some diseases, however, coloured excretions may take place from the bowels, and these are to be attributed to a vitiated secretion from the surface of the alimentary canal, as in melæna, rather than supposed to be poured forth solely from the liver. Farther, it is probable, "that the profuse discharge which sometimes follows the continual exhibition of purgatives, consists of morbid secretions from the bowels themselves, and not of the residue of alimentary matter detained in those organs. Such evacuations, either occurring spontaneously, or excited by medicine, frequently relieve irritation of the chylopoietic viscera."

"The colour of the alvine excretions in disordered states of the viscera is various. Sometimes they appear to consist of the residue of the food untinged by bile. Sometimes they are of a light yellow colour, which denotes a very deficient quantity of healthy biliary secretion; they may also be of a deep olive, of a clay brown, and of a blackish brown; all which shew a vitiated state of the biliary secretion." We find these varieties of colour very suddenly changed by medicine. Small doses of

mercury for instance, with any alteration of diet, sometimes change the stools immediately from a blackish, to a light yellow colour, which indicates a healthy, but deficient secretion of bile. Any kind of brown, remarks the author, which dilution will not convert into yellow, I should consider as unhealthy, since the colour of healthy bile is a bright yellow, which, by concentration, appears brown. This test of dilution is an important one, since we very well know how much the colour of the fæces is influenced by diet and medicine.

To what has been said of the participation of the liver with diseased actions of the organs in its neighbourhood, and of making the derangement in its functions a criterion of those of the stomach and intestines, it may be objected, that the liver is liable to idiopathic affections, and that the alimentary canal may be affected without disturbing the liver. These circumstances should be considered as exceptions to general rules. "In general, affections of the former influence the functions of the latter; and the state of the biliary secretion affords a very useful evidence of a more or less general derangement of the chylopoietic viscera, and should excite our attention to investigate its kind and degree." What has been said of the agency of disturbance in the digestive organs in the production of the symptoms attributed to them, gain support from observing the effects of blows on the organs. The symptoms are found to be furred tongue, great vomiting, so that the stomach could retain no food, difficulty of affecting the bowels by medicine; great fever; and even delirium. The disorder has generally terminated by a profuse discharge of black and fetid stools, after which the patient has perfectly recovered. In cases, however, where local disease, diseased joints, &c. have produced all these symptoms, dissection has shewn no alteration in the structure of the chylopoietic viscera, which could be decidedly pronounced to be the effect of disease. In other instances, where the disordered state of the bowels has been of longer duration, alteration in structure, particularly in the larger intestines, has been detected on dissection, differing in degree according to the length and violence of the disease.

The following case may display how much hepatic irritation may affect the sensorium, and consequently the whole nervous system:—"A gentleman applied to me with a thickened and

tender state of the periosteum of his tibia. This disease had troubled him for more than a year, but became, at last, so extremely painful, that he declared he had not slept for three months. His tongue was furred, his appetite was moderate, and he was not conscious that his digestion was otherwise than good. His bowels were perfectly regular. I desired him to take five grains of the pilul. hydrarg. every second night ; but, before he took them, to remark the colour of the discharges from his bowels, and to observe whether the medicine produced any change of it. In a week's time he called on me and said, 'I come to tell you the strangest thing that, perhaps, you ever heard ; which is, that I actually do not know the precise spot where the lump on my skin was situated. The first pill gave me sleep, which I had not had for three months. After taking a second, I have slept soundly all night, and feel myself alert in the day.' I asked him, had he, as I requested him, remarked the colour of the alvine discharges ? He replied, he had ; and that, before he took the medicine, they were, (to use his own words,) as black as his hat, and now they were of the colour of a ripe Seville orange. The great relief arising from the correction of the biliary secretion was not to me so strange, as the patient expected, &c." The result of all Mr. Abernethy's observations made relative to the subject to which the first part of this Treatise is devoted, has induced him to believe, that the disorder of the digestive organs, caused by the various circumstances which have been recited, consists in a weakness and irritability of the affected parts, accompanied by a deficiency or depravity of the fluids secreted by them, and upon the healthy qualities of which the due performance of their functions seems to depend.

The *occasional effects* of disorder of the digestive organs are very numerous, and an acquaintance with them extremely important. It may produce in the nervous system a diminution of the functions of the brain, or a state of excitation, causing delirium ; partial nervous inactivity and insensibility, or the opposite state of irritation and pain. It may produce, in the muscular system, weakness, tremors, and palsy ; or the contrary affections of spasm and convulsions. It may excite fever by disturbing the actions of the sanguiferous system, and cause various local diseases by the nervous irritation which it produces, and by the weakness, which is consequent on nervous disorder or imperfect

chyfication. Or if local diseases occur in a constitution deranged in the manner which I have described, they will become peculiar in their nature and progress and difficult of cure. Affections of all those parts which have a continuity of surface with the stomach—as the throat, mouth, lips, skin, eyes, nose, and ears may be originally caused or aggravated by this complaint. I do not undertake upon myself to say that this disorder of these organs, which existed in all the cases related in my book, was the primary cause of the general derangement of the constitution, with which the local disease appeared to be connected; it might have been the consequence.

TREATMENT.

“Believing the disordered parts to be in a state of weakness and irritability, my object has been to diminish the former and allay the latter. Believing also that the secretion into the stomach and bowels, upon the healthy state of which the due performance of their functions depends, were, in consequence of such disorder, either deficient in quantity or depraved in quality; I have endeavoured to excite, by means of medicine, a more copious and healthy secretion.”—p. 63, 4. In the treatment, the first thing to be attended to is the diet. This should be nutritious and easy of digestion, and patients to eat nothing that they could not digest. We are to urge our patients not to oppress the power of the stomach by too great a quantity of food, nor to take a second meal until time has been allowed for the digestion of the first, and for the recovery of the powers of the stomach. The stomach however is not to be allowed to become irritable by too long abstinence.

Where the secretions into the stomach have been deficient, 5 grains of rhubarb given an hour before dinner have seemed to have the effect of supplying them. “This gentle excitation perhaps induces it to expel any residue of alimentary matter, and creates a kind of artificial appetite; so that persons habitually subject to indigestion experience very considerable benefit from the practice: where rhubarb has disagreed, columbo has been substituted.” The quantity of food taken into the stomach should be proportioned to its power, and to those of the general system. If in too great a quantity, a plethora may be the consequence—extremely unfavourable to the cure of any organ morbidly irri-

table, and which may in fact produce in it alteration of structure, and irremediable disease ; while the opposite extreme may be equally unhappy in its effect. Long accustomed stimuli should be gradually abstracted ; a certain quantity may assist the organ in the performance of a function, which a larger one may diminish or entirely suspend. Some wine may be allowed after dinner. " It is wrong to stimulate the stomach, when it has no task to perform."

If food may derange the functions of the stomach by its improper use, it may be rendered medicinal in its effects, and in cases where the organ is merely irritable, without being weak, we may do much, by attending to the food, to remove that irritability. " A vegetable diet and abstinence from fermented liquors may tend to tranquillize it." Where weakness and irritability coexist in the same subject, the most readily digested aliment is the best, and cordials are sometimes beneficial. The close relation which subsists between the stomach and brain, their powerful sympathies, should always be kept in view, in treating these cases. The brain may be the irritable organ, and the stomach only the mean, if I may so say, to give us information of this fact by its deranged functions. Food therefore as an agent in the cure, must be adapted to the state of the organ principally affected, must be stimulating, tonic, or not, as the irritability may be the consequence of plethora or exhaustion. It should be also kept in view, that the nervous disorder may be aggravated by means which might be serviceable to the stomach, were this organ only affected, and that the converse of the proposition is equally true.

The particular remedies and their various modes of exhibition will be now mentioned. The state of the tongue has been considered one of the best guides to that of the stomach. It should also be particularly regarded in the treatment of these cases. If for instance it be much furred, cinchona and steel, as a general rule, are not indicated. This state of tongue, viz. that of *deficient secretion*, is most probably connected with, or the consequence of a similar one, of the stomach. Now if we give the articles just mentioned and similar ones, whose effects are to diminish the secretions, already so much impaired, we run the hazard of increasing rather than diminishing the malady. The indication is to increase the secretions, and the treatment now to be mention-

ed has a direct tendency to produce that effect. "The object which I have had in view, in all cases, is to excite the peristaltic action of the bowels, without irritating them, so as to induce them to pour forth and evacuate their own fluids. The administration of purgative medicines in very small doses, at regular intervals, is in many cases the best mode of effecting this purpose." The manner in which the continued use of purgatives, given in such manner as do not immediately purge, relieves disorders of the digestive organs, seems to be, by producing morbid secretions into those organs. In support of this lenient plan of exhibiting these remedies, it may be remarked that it has answered well the purposes of a more powerful one. The state of these organs however must be particularly noticed, their predisposition to costiveness and the contrary, for we shall find in some cases very trifling effects from a very liberal use of very active articles, while in others, very small doses shall excite very disproportionate actions.

Mr. Abernethy has found the following formula answer very well, increasing or diminishing the quantity of the ingredients as circumstances have required.—

R.	Infus. Gentian. Comp.	unciam unam.	
	Infus. Sennæ.	—	drachmas duas.
	Tinct. Cardamom. Comp.	drachmas unam.	M.
Fiat haustus, bis quotidie, vel pro re nata, sumendus.			

When irritation in the large intestines has been denoted by the mixture of mucus and jelly with the fæces, and sudden and urgent calls to void them, castor oil, mixed with a large proportion of mucilage, have answered best as aperients.

"I have not been inattentive to the error in the biliary secretion, which exists in the greater number of these cases." Nothing has had a better effect in this state of this secretion than *small, unirritating, and undebilitating doses of mercury, to be taken every second or third night, till the stools become of a rhubarb colour.*

The preparation of mercury preferred is the pilul. hydrarg. or blue pill, of which five grains are to be given every other night. It must be recollected however that cases may occur in which more active preparations of the article must be resorted to, and their use continued till the indication be thoroughly answered. At times the stomach is irritated by the use of mercury,

when the actions of the brain are improved and the stools rendered natural ; while in some cases these effects have been brought about by other means than mercurials. But the mode of exhibiting the remedy just mentioned, " has at least the advantage of being innocent ; and if months elapse before the object is accomplished, we cannot wonder at the tardiness of the cure, when we consider the probable duration of the disorder, prior to our attempts to correct it. With the practice now recommended, we are to insist on such use of exercise, as the patient can bear. It should be taken in an atmosphere as pure as can be found. It should be persisted in although ever so disagreeable at first, and it will be invariably found that as convalescence advances, it will be practised with increasing pleasure, and be found a most useful mean in producing confirmed health."

(To be continued.)

REMARKABLE CASES IN MILITARY SURGERY.

[Translated from Baron Larrey's "Chirurgie Militaire," for the New-England Journal of Medicine]

THE wounds in the thorax have presented some singular phenomena, which have given me an opportunity of varying or correcting the methods commonly employed.

The great number of soldiers I had seen perish with hemorrhage, in consequence of penetrating wounds in the thorax with injury to the lungs, induced me to try a method which the desperate state of the patient suggested, in a similar case, which occurred in a soldier, whom I received immediately after, in the hospital of the farm of Ibrahim Bey.

The wound of this soldier, made with a cutting instrument, penetrated the chest between the fifth and sixth true ribs, whose direction it followed. It was about eight centimeters* in extent. At each inspiration, a great quantity of florid and frothy blood issued with a hissing noise. The extremities were cold, the pulse scarcely sensible, the countenance discoloured, the respiration short and laborious : in short, the patient was threatened with instant suffocation.

* More than three inches.

After having examined the wound and assured myself of the parallelism of division of the parts, I brought together the lips of the wound, and fixed them in contact, by means of adhesive plasters and a proper bandage.

In making this application, I had nothing in view but to conceal from the patient and his comrades the afflicting spectacle of a hemorrhage, which was pouring out the life of this unfortunate man, with his blood. I calculated besides *that the effusion of this fluid in the chest could not increase the danger.*

But scarcely was the wound closed, before the patient breathed more freely and found himself relieved. His heat soon revived, the pulse became stronger, after some hours he was quite easy, and to my great surprise went on better and better. He was cured in a few days without further difficulties. Two cases precisely similar occurred in the hospital of the imperial guard.

The astonishing success, which I obtained in these three cases, induces me to believe, that this method is preferable to that, which has been hitherto employed.

We have also frequently practised the operation for empyema with complete success. The operation is not the most difficult part of the business; but I have remarked that it was done with more certainty when performed in the interval of one or two ribs higher than the part usually designated. For the presence of pus in the thorax is an irritating cause which often produces adhesions between the pleura and the diaphragmatic arch. In consequence of this the depth of the thorax is lessened, and the collection of pus removed higher up. In consequence of this, I have seen the common operation fail a number of times, and on opening the body after death, the effusion was discovered.

I now pass to the consideration of wounds, and some particular diseases of the abdomen, which occurred in Egypt.

Peter Bayard, a corporal in the 18th demi-brigade, experienced a periodical flow of about a quart of blood. These hemorrhages were preceded by symptoms of turgescence and followed by the usual state of health. At the latter time the umbilicus appeared in its natural state, and without any opening. On the approach of this sanguine flux the umbilical tubercle swelled, assumed a bluish colour, opened and discharged a great quantity of blackish and oleaginous blood, which used to exude during two

spaces in the twenty-four hours. The abdomen of this individual was always a little prominent, his liver hard and enlarged. There is no doubt but that this flow of blood proceeded from the umbilical vein which had preserved its caliber—an occurrence which is pretty uncommon.

At the assault of Cairo, in the year 1799, M. N—— received a gun-shot wound in the abdomen, which cut the muscular parietes of this cavity on the right side, and a portion of the intestine ileum. As I was on the field of battle, I administered to him the first assistance he received. The two ends of the intestine were protruded, separated from each other, and swelled. The superior end was turned on itself, so that its constricted edge strangulated the intestine, like the paraphymosis. The passage of intestinal matter was interrupted, so that it accumulated above the constricted part.

Although the condition of this wounded man was almost desperate, both from the nature of the wound and the state of weakness and cholera-morbus, to which he was already reduced in the little time that he had been left without assistance in an entrenchment, I attempted to remedy this singular accident.

In the first place, by four little incisions, I divided the collar of the strangulated intestine, which I placed in its natural situation. I passed a thread through the mesentery, which corresponded with the two ends of divided intestine; this thread was brought to the edge of the wound, which I took care to dilate. This being done, I waited for the event. The first days were stormy. Afterwards the unpleasant circumstances were dissipated; those which depended on the loss of the alimentary matters were gradually lessened; and after two months of careful treatment, the ends of the intestine were prepared to form an adhesion. I assisted the work of nature by the application of the ingenious method of M. Desault; that is, the *tampon* or plug, which was employed for two months at different times. This soldier left the hospital perfectly cured.

The sigmoid flexure of the colon was wounded in many subjects, and the wounds have been cured without stercoral fistula. The siege of Acre afforded three examples of this occurrence, and that of Cairo two. I took care to dilate the entrance and exit of the ball thoroughly. The patients were made to employ

very frequent enemias of linseed, to take mild drinks, a strict regimen and repose.

Wounds of the bladder, in general, had an equally fortunate termination. The most remarkable case is that of Francis Chaumette, horse-chasseur of the twenty-second regiment, who was wounded at the battle of Tabor. The ball passed through the pelvis, from the hypogastric region, at a finger's breadth from the pubis, to the point of the left hip, which corresponds with the ischiatic notch. The direction of the wound and the discharge of urinary and fecal matters at the two wounds, satisfied me of the injury of the bladder and the intestine rectum. M. Milioz, who was charged with the surgical direction of the division Kleber, carefully pursued the process, which he had seen me employ at the siege of Acre. At the period of the suppuration, the patient had fever; and on the separation of the eschars, there was an abundant discharge of matters. The catheter, being introduced into the bladder, prevented the infiltration of urine, and thus facilitated the adhesion of the lips of the wound in this viscus, which was the first cicatrized. This patient was perfectly cured on his return to Cairo.

I will also mention the case of a man named Dacis, aged about twenty-seven years, corporal in the 9th demi-brigade of the line, who was wounded by a fire-arm at the eleventh assault of Acre. The ball passed from the right hip, near the tuberosity of the ischium, into the pelvis where it passed through the lower part of the bladder. The intestine rectum was wounded, and the ball made its way out in the perineum, at the part where the operation for the stone is performed. It then turned forward and to the right, entered a part of the muscle triceps femoris and came out in the right groin, near the crural arch, and on the inside of the crural vessels, which happily were not wounded.

The sudden passage of urine by the lower wounds, and the involuntary discharge of feces, caused by the rupture of the sphincter ani, informed me of the injury of the organs I have mentioned. The pains were acute; the wounded man was uneasy, agitated, and in a state of insupportable tenesmus. The fever was kindled up, from the first twenty-four hours, and was pretty violent until the separation of the sloughs.

This soldier, having been carried to my *ambulance*, I afforded him the first attentions, and continued to take care of him,

until he was cured. In the first place, I dilated the external wounds deeply, and on the first day I passed a gum-elastic catheter into the bladder to prevent extravasation of urine. I had a tent covered with cerate placed in the rectum, and prescribed enemas and a cooling regimen. The first days were bad; on the separation of the eschars, which took place from the ninth to the twelfth day, the difficulties were lessened. He passed but little urine by the wounds, and rarely any fecal matters. The wound in the hip was cured first, next that in the groin; but I did not obtain the cicatrization of that in the perineum, until after six weeks of treatment directed by myself, and confided to the particular care of my pupil M. Zink. The cure was complete, and there was no incontinence either of feces or urine.

Desjardins, fusilier in the thirty-second demi-brigade, was wounded in a sortie of the garrison of Acre, by a ball which passed through the pelvis from the left ischiatic notch to the scrotum of the right side where it stopped. The lower part of the bladder was wounded in two opposite points, and the urine was extravasated in the scrotum which swelled prodigiously and became gangrenous. M. Gallout, surgeon of the first class, dilated the entrance of the ball, and incised the scrotum where it was lodged. On the following days, it was necessary to make deep scarifications of these parts in order to arrest the progress of the gangrene and diminish the labour of nature in the separation of the eschars. A catheter of gum-elastic was introduced into the bladder to prevent the farther infiltration of urine. After a fortnight of sufferings the cure was assured. The sloughs separated, the posterior wound closed quickly, but that of the scrotum was a long time in cicatrizing. On our return to Egypt, the patient still had a urinary fistula, which healed soon after.

Many similar cases presented themselves in the different combats, which took place afterward, and all the wounded were cured by the same treatment. General Bon was the only one who died of a wound of this kind; for he would not allow his wounds to be dilated, nor a catheter to be introduced into the bladder. The extravasation of urine immediately produced gangrene, which was promoted by the *embonpoint* of the subject.

I shall now briefly trace the results of this kind of wounds, and the treatment which is proper for them.

In the first twenty-four hours, wounds of the bladder made by fire arms, allow the escape of but little urine in consequence of the tumefaction which takes place in the lips of the wound almost instantaneously. When the bladder is full there is no discharge from it, except at the instant of the wound, and then only at the exit of the ball. The infiltration is prevented by the thick eschar, which fills the whole passage of the wound, and prevents its taking place until the separation of the eschar. It is, therefore, highly important that there should constantly be in the bladder an elastic catheter, large enough to fill exactly the canal of the urethra; for if, at the time when the eschar separates, the urine had not an easy outlet, it passes through the wounds and gets infiltrated with so much the more ease, as the separation of the sloughs presents a great number of orifices in the cellular membrane. Hence the gangrenous affections and death, the fatal termination of the wound of General Bon.

After having thoroughly dilated the wounds to facilitate the escape of urine, which may be lodged in the passage of the ball, a large gum-elastic catheter must be introduced and fixed permanently, except that it must be changed once in three or four days to avoid incrustations. We must also prescribe emollient enemas and mild acidulated drinks, and make the patient observe a severe regimen and the most perfect repose. The dressings should be simple, and made with a particular attention to cleanliness.

ANIMAL CHEMISTRY.

[For the New-England Journal of Medicine and Surgery.]

THIS department, equally with most others of the extensive science of Chemistry, has lately been investigated, with great ability, by several eminent chemists. Among those who have particularly distinguished themselves in this pursuit are Mr. Brande of the Royal Institution, Dr. Bostock of Liverpool, and Professor Berzelius of Stockholm. It may not, perhaps, be considered useless to give a brief, but connected view of their labours, and the conclusions which have been drawn from the results of their experiments on the animal fluids. In doing

this we shall be under the necessity, in some instances, of repeating a part of what has already appeared in this Journal, but this inconvenience, we hope, will be compensated by the advantage of comparing these observations with those of other chemists, and of collecting into one paper the most important facts which have recently been discovered in this branch of chemistry.

1. *Of the Blood.*—None of the animal fluids has attracted so much attention, nor been subjected to so many analyses as the blood; a fact at which we shall no longer wonder, when we consider its important uses, the variety of elements which it furnishes to the whole system and its influence in the process of respiration. From Rhades and Menghini to the period of Dr. Wells and Mr. Brande, the existence of iron, even in considerable quantities, in the blood, had not been doubted. The celebrated analysis of the French chemists, Fourcroy and Vauquelin, had shown the states in which it exists in that fluid, and they inferred that the difference of colour which it exhibits was dependent on these states, since, by mixing the phosphate, or subphosphate of this metal with solutions of albumen, they affirmed that colours were produced similar to those discovered by the blood. Whence it happened that iron came to be regarded as one of its most important proximate principles. It was thought to be the vehicle by which the system was to be oxygenized, or by which the oxygen, supposed to be absorbed through the membrane of the pulmonary vesicles, was to be circulated throughout the body. The change of colour in the blood during the process of respiration was thus satisfactorily explained on the idea of the relative proportion of oxygen united with the iron, being different before and after it entered the lungs, and by the discharge of carbon in the form either of carbonic acid or of carburetted hydrogen. But this hypothesis is no longer tenable, since we have become acquainted with the experiments of Mr. Brande and Professor Berzelius.

The first of these chemists, in fact, has ascertained that iron constitutes but a very minute part of the colouring matter of the blood. "The proportion of iron," says he, "afforded by the incineration of several varieties of animal coal, is much less considerable than we have been led to expect; and the experiments noticed in the fifth section shew, that it is not more abundant in the colouring matter of the blood, than in the other sub-

stances which were submitted to examination; and that traces of it may be discovered in the chyle which is white, in the serum, and in the washed crassamentum, or pure fibrina." The proportion of this metal is, in fact, so small, that the colouring matter even of a pint of blood afforded only a perceptible quantity.

The experiments of Berzelius confirm the results of those of Mr. Brande, and they both go to deprive iron of the importance which has hitherto been attached to it as a proximate principle of the blood. The experiments of the former are numerous, and their details occupy more room than we can spare on this subject. With respect to the properties of the colouring matter, he found that its solution was opaque, of a deep brown colour and of a saline, nauseous taste. By heat a portion was coagulated; the solution filtered while hot was of a red colour, which it lost on cooling. With the acetic acid it forms a soft jelly soluble in water and decomposable by the alkalies and alkaline prussiates, the precipitates, which were of a dark brown, consisting of the colouring matter *unaltered*. "The prussic acid, therefore, appears to exert no action on the colouring matter of the blood." According to the same chemist, this matter appears to exhibit the same chemical properties, and consequently to possess the same chemical composition, as the fibrin, being distinguishable from each other principally by a difference in colour.

After observing that the colouring matter is incinerated with great difficulty, and pointing out the mode by which it may be best effected, he proceeds to remark, that the carbonaceous matter which remains after the flame has ceased to appear, is not a mechanical mixture of charcoal with the phosphates and carbonates of the earths and of iron. "We must consider it as a chemical compound of carbon, phosphorus, sulphur, with calcium, ammonium and iron; and it appears that it is in a mode analogous to this combination that the iron as well as the calcium, phosphorus, &c. are united with the charcoal and the other constituents of the colouring matter." Whence he takes occasion to express the following important fact: "For it is very evident, that the mode in which combustible bodies combine with one another, and with a small portion of oxygen in organic substances, is totally different from that which prevails among the inorganic productions of nature."

Professor Berzelius then states the result of the analysis which he made of the ashes remaining after the incineration of four hundred grains of colouring matter. The amount of these was five grains, and supposing them to be divided into a hundred parts, they gave the following proportions of ingredients.

Oxide of Iron	-	-	-	50
Sub-phosphate of Iron	-	-	-	7 50
Phosphate of lime, with a small proportion of magnesia	}			6
Pure lime	-	-	-	20
Carbonic acid and loss	-	-	-	16 50
				<hr/>
				100 00
				<hr/>

But, says he, this phosphate, in all probability, was not contained in the colouring matter, nor even in the ashes; it has evidently been a product of the analytic process. "The iron, in the colouring matter, is not contained in it in such a way as to admit of being detected by the best reagents we possess, until the composition of the colouring matter is entirely destroyed;" and he asserts, that the opinion of Fourcroy and Vauquelin, respecting the action of sub-phosphate of iron and albumen in producing a red colour, &c. is *void of foundation*.

2. *Gelatine*.—The experiments of Fourcroy and Vauquelin, were supposed to have established the facts, that gelatine is another proximate principle of the blood, and that it exists as an essential ingredient in that fluid which may be pressed out of coagulated serum, and which has been called by physiologists, the *serosity*. It has, also, been thought to constitute a part of most, if not all, of the soft animal solids. Later and more accurate experiments, however, appear to have demonstrated that these opinions are ill founded, and that it is at least doubtful whether gelatine even exists as a component part of our bodies. The researches of Mr. Brande into the nature of the serosity, which were apparently conducted with great accuracy, terminated in the belief that gelatine does not exist in the blood, that it is a compound of albumen with an excess of alkaline, and that "it is not merely separated from the blood in which it has been supposed to be present ready formed, but is an actual product of secretion."

This conclusion appears to be supported by the experiments of Dr. Bostock, the details of which may be found in the third volume of the *Medico-Chir. Trans.* The results are thus stated:—1. The serosity of the blood contains no jelly. 2. It contains a minute portion of albumen. 3. It contains about two per cent of solid contents, the chief part of which is an animal matter different both from albumen and gelatine. 4. It contains a little muriate of soda, and probably, also, a minute quantity of uncombined alkali. 5. The animal matter peculiar to the serosity is not affected, either by the oxy-muriate of mercury or by solution of tan; and it is not like albumen rendered insoluble by heat.

On this subject also Professor Berzelius observes, that “All authors who have written on the blood assert, that gelatine is one of its constituent parts. This, however, is a mistake, and arises from the gelatinous appearance of the albumen, as I have never been able to detect the smallest particle of gelatine in the blood; and, as far as my researches extend, I have found gelatine to be a substance altogether unknown in the economy of the living body, and to be produced by the action of boiling water on cartilage, skin and cellular membrane, substances which are totally distinct from fibrin and albumen.” In relation therefore to this principle, Mr. Berzelius differs from Mr. Brande, for the latter supposes it to make a constituent part of the body, and to be formed by the secretory process, while the former, as has just been stated, denies its actual existence as a proximate principle.

3. Another singular circumstance which is stated as a fact by Professor Berzelius, is the analogy of properties between the fibrin, the albumen, and the colouring matter of the blood; which coincidence appears to be strongly supported by experiment. He remarks, however, that the fibrin and the colouring matter are distinguishable from each other by their colour, by the fibrin coagulating in all temperatures, while the colouring matter may be dried without losing its solubility in water, and becomes insoluble only in a certain temperature; and by the peculiar character of the latter when coagulated, such as its not being diminished in volume during desiccation as happens with fibrin; differences however which do not seem to be so essential, as to require that they should be considered as distinct sub-

stances. The same observations, derived from his experiments, are equally applicable to albumen, for he says, "There appears to be very little difference between fibrin and albumen; the only differences to be discovered are, that albumen does not coagulate spontaneously, and that it dissolves more slowly in acetic acid and ammonia than fibrin."

4. Having thus disposed of the blood and its constituents, this excellent chemist proceeds to the analysis of the other fluids of the animal economy, and commences with the following important observations. "There are two classes of secreted fluids, viz. the *secretions* properly so called, or the fluids intended to fulfil some ulterior purpose in the animal economy; and the *excretions* which are directly discharged from the body. The fluids of the former class are all alkaline; and of the latter all acid. The excretions are the urine, the perspired fluids and the milk. All other fluids belong to the former class. The alkaline secreted fluids may be divided into two very distinct classes. The former of these contains the same quantity of water as the blood, so that the change induced by the nervous influence seems to be confined to the altering of the chemical form of the albuminous materials, without affecting their relative proportion to the water and other substances dissolved in the blood. The bile, spermatic fluid, &c. are of this kind. The latter species consists of fluids in which the influence of the nervous system has separated a large proportion of albuminous matter, and left the remaining liquid proportionably more watery. The saliva, the humours of the eye, and the effused serum of the membranes are of this species, and in these the quantity of salts, and, in general, also of alkali, is the same as in the blood."

"The influence of the chemical agent of secretion therefore is chiefly spent on the albuminous materials of the blood, which seems to be the source of every substance that peculiarly characterises each secretion, each of which is *sui generis* and is its principal ingredient. All the other parts of the secretion appear to be accidental."

"Therefore in examining the secreted fluids, the chief attention should be paid to the peculiar matter of the fluid, which varies in all. This substance sometimes retains the properties of albumen; at other times, none."

To render this subdivision of the alkaline secreted fluids perfectly clear we shall insert the analysis of fluids, each belonging to a different species.

First species. Bile 1000 parts.

Water	-	-	-	-	907 4
Biliary matter	-	-	-	-	80 0
Mucus of the gall-bladder, dissolved in bile					3 0
Alkalies and salts common to all secreted fluids					9 6
					<hr/>
					1000 0
					<hr/>

Second species. Saliva 1000 parts.

Water	-	-	-	-	992 9
A peculiar animal matter			-	-	2 9
Mucus	-	-	-	-	1 4
Alkaline muriates			-	-	1 7
Lactate of soda and animal matter				-	0 9
Pure soda	-	-	-	-	0 2
					<hr/>
					1000 0
					<hr/>

5. Dr. Bostock and some other chemists having frequently alluded to mucus as a proximate principle in their analyses of the fluids of the body, Professor Berzelius observes, "I must now mention that there is no such principle as the mucus of the animal fluids, the substance so considered being in reality lactate of soda mixed with the animal matter which always accompanies it."

6. Berzelius has bestowed much attention on the urine and has apparently taken great pains to analyse it correctly. As this is an excreted fluid, it is according to him, acid. The acids of the urine, which do not at all exist in the blood, are the sulphuric, the uric, and sometimes the benzoic; the others are the phosphoric and lactic. He has also found it to contain fluoric acid.

The following is the result of the analysis of 1000 parts of this fluid.

Water	-	-	-	-	933 00
Urea	-	-	-	-	30 10
Sulphate of Potash	-	-	-	-	3 71
Sulphate of soda		-	-	-	3 16
Phosphate of soda	-	-	-	-	2 94

Muriate of soda	-	-	-	4	45
Phosphate of ammonia	-	-	-	1	65
Muriate of ammonia	-	-	-	1	50
Free lactic acid ; Lactate of ammonia ; Ani- mal matter soluble in alcohol, and usually accompanying the lactates ; Animal matter soluble in water ; Urea not separable from the preceding	-	-	-	17	14
Earthly phosphates, with a trace of fluat of lime	-	-	-	1	00
Uric acid	-	-	-	1	00
Mucus of the bladder	-	-	-	0	32
Silex	-	-	-	0	03
					<hr/>
					1000 00
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We have thus stated the results of the most important experiments of Mess. Brande, Bostock, and Berzelius. We should have been glad to have had it in our power to introduce all their details, but their length is such that it was found impracticable. From those which we have stated, however, it will be seen that these researches must have a considerable influence on animal chemistry. They are not calculated to support any hypothesis, and their results have had the effect to undeceive us in relation to the existence of some principles, and the undue importance which has been attached to others in the animal system. The observations of Professor Berzelius are in a great measure novel, and require a more particular attention. He seems to be the first who has had just views of the nature of the combination of the different elements which constitute the animal body ; and has been ready to ascribe to the principle of life, its due influence on the actions of living matter. It has appeared to us that the science of chemistry has of late been insinuating itself too far into physiology ; that the cultivators of this branch of medicine have too readily adopted the ideas of the chemists and have been too much disposed to explain the operations of the system by the same laws which are found to regulate inert, unorganized bodies. The processes of digestion, of assimilation, of secretion, and the production of animal heat, have been considered as the results principally of the action of chemical laws ; and a principle

which during life, never for a moment ceases to operate, which pervades the whole body, moves and animates every fibre, and which is capable of increasing or diminishing, of counteracting or altering the effects, which flow from the operation of physical laws in their strictest sense, is either merely alluded to as of secondary consequence, or entirely overlooked in this system of chemical affinities. The observation of Berzelius, there is little doubt, is founded in truth, "that the mode in which combustible bodies (and the remark might have been extended to all other bodies) combine with one another and with a small proportion of oxygen in organic substances, is totally different from that which prevails among the inorganic productions of nature." And why is it different? because, it may be answered, what he calls the "chemical agent," which might perhaps with more propriety be denominated the vital agent, operates in the living body, independently of the common laws of chemistry, but their actions may in some cases be associated, though not identified with each other. When this "vital affinity"* ceases to act, then the ordinary laws of chemistry come into play, and their results on dead animal matter are well known. Thus with respect to the animal fluids, it is not improbable, that at the moment, or at least soon after, they leave the body, some change in the relations of their elements may take place, and compounds be thus formed, which did not previously exist. The modes of analysis necessarily practised, may equally vary their states of combination; for in cases, in which there is a delicate balance of affinities, exposure to different temperatures alone, may produce the effect, and it may be further increased by the addition of foreign bodies, even of water, from which there may be no obvious physical change, except in degrees of liquidity; and lastly when we proceed to the use of various reagents which are known to act chemically, it can hardly be supposed, but that substances may be thus formed, and be supposed to make a part of fluid, which did not exist in it, as such, while circulating or residing in the animated system.

* For these terms we are indebted to James Jackson, M. D. of this town. In speaking of the actions of the living system, in contradistinction to those of the particles of dead matter, they appear to be peculiarly appropriate.

It appears therefore correct to say, that in relation to the living body, in which, it will not be denied, there exists a principle, distinct from, but at least equally energetic with any that has been appropriated to the science of chemistry, we ought not to refer the results of its functions to the latter alone, nor even in any considerable degree. It may be doubted, in fact, whether the definition of chemistry should be made to embrace the operations of living systems; for although the materials which are acted upon in the latter, are nearly the same with those that, out of the body, become the subjects of the former, yet the means by which these changes are effected are evidently different, and their effects are frequently without any coincidence. The processes of "vital affinity" cannot be imitated by the chemist, and we cannot avoid smiling at those philosophers, whose zeal has led them to attempt the formation of bile and the gastric secretions, or who have thought to make blood from solutions of albumen and iron, by the powers of voltaic electricity.

If these observations be just, digestion, respiration, the production of animal heat, and the process of secretion, &c. are functions which it is not the province of chemistry to explain; and, until we have acquired a more accurate knowledge of the vital principle, we must be contented with a state of ignorance, from which the researches and discoveries in that science alone have not and probably never will deliver us.

These ideas are confirmed by the simple fact, that notwithstanding all the attention which has been bestowed on this branch of chemistry, and the accurate investigations and analyses which have been made, very little indeed of useful practical knowledge has been afforded to the science of medicine. The discoveries made in this department cannot be put in competition with the advantages which have flowed from the cultivation of the other branches of this science. The animal fluids have been examined in every shape; but who is there, that from a knowledge of the chemical nature of the spermatic fluid, has derived any additional information on its influence in the process of conception? Who, from knowing the composition of the bile, as stated by chemists, can assign its use in the function of digestion? What physician can improve his practice in dropsy by an acquaintance with the analysis of effused fluids? And what insight into the functions of the brain, or the operations of the mind,

does the physiologist or the philosopher anticipate from the long expected and doubtless able analysis by Vauquelin? Since the discovery, that medicines taken into the stomach operate on the living principle, on the powers and not on the parts of the system, it is not to be expected that our knowledge of the composition of the latter should indicate the modes of influencing the former. The two branches of science, though not perhaps entirely distinct, are in fact but slightly connected; and we believe that a man may be a very good physician, who is but little acquainted with animal chemistry. We do not however mean to say that the cultivation of this subject has furnished nothing to the science of medicine: it is well known that in a few instances it has afforded some useful hints. Experience has taught us, that the most successful mode of treating Diabetes Mellitus, is to confine the patient to a diet composed exclusively of animal substances; a regimen which was probably suggested by the analysis of sugar and which has been found useful, because it introduces into the system nutriment, containing a much less proportion of the elements of sugar than is known to exist in vegetable food. So also the analysis of urinary calculi has proved, that the mass sometimes consists of a peculiar acid alone, and at others of an acid united with some neutralizing base; hence, a mode of treatment has been adopted, calculated to prevent the formation of the acid, or to lessen the size of the stone—a practice, however, on which no dependance is to be placed.

We have made these observations, not from any wish to discourage an inquiry into the chemical nature of the different parts of the body when disorganized and dead; but from a belief, that too much importance has been attached to analyses which, after all that may be said in their favour, can be of little practical utility in relation to the affections of the living body, and which have a tendency to introduce into physiology and medicine ideas, that ought to be confined to the systems of chemistry.

READINGS AND REFLECTIONS.

Habitual Colic.

THERE are not a few instances of persons who are subject to frequent attacks of colic, attended in many cases by vomiting. They are immediately produced by various causes ; such as exposure to sudden changes of temperature, fatigue, irregular rites of diet, &c. But why does it happen, that in some persons these causes produce colic, and not in others ? Does it not even appear that the colic occurs in some cases without any preceding irregularity, either in diet or regimen ? To the latter question, observation answers in the affirmative. This fact and the first question are at once explained, if we find in persons thus frequently affected with colic, some permanent cause of disease within the body. There, probably, may be several causes thus residing within the body. I have found worms in the alimentary canal to be one of the causes, and this especially in children. But organic affections of some of the abdominal viscera are the most usual causes of the frequent recurrence of colic. I shall not now discuss the mode in which such organic derangements operate in these cases. I will only state, that I have found this disease to be occasioned by stricture in the rectum, as stated by Mr. Copeland ; and I think by other organic affections of the large intestines ; and that I have also repeatedly seen this complaint to be owing to diseases changing the structure of other organs, such as of the pancreas and liver ; but most especially of the last.

J.

MR. HENRY HYDE, the *father* of the famous Edward, Earl of Clarendon, Lord Chancellor of England, was, for many years, subject to a peculiar disease, which increased upon him as his life advanced, and particularly from his sixtieth year. He was often, by day and by night, pressed to make water ; but from the frequency of the call, a small quantity only was voided at a

tion; by repeating it in this manner every day, commencing with one spoonful, as on the first day, then two, three, four, &c. but adding to each dose four grains of the then eight grains the third day, twelve the fourth, sixteen the fifth, twenty the sixth, and so one after the other; repeated experience has shewn me, that there is scarce any one who, with this precaution of increasing the dose of the remedy very gradually, may not bear very well, one or two grains of it at a time, and what is remarkable about these large doses, although they neither vomit nor purge, it nevertheless has, at times, at very beneficial effect, not only on febrile diseases, but also on others, in which we should not suspect it; such as apoplexy, madness, obstructions, &c. I do not know if other remedies might be administered in this way with the same success, but every trial I have had occasion to make with the white vitriol, and the good effects we observe every day, of the flower of zinc, of the cuprum ammoniacale, of the nitrate of silver, of the cicuta also, and of aconite, &c. administered after this manner, has induced me to believe it."—p. 15.

"It would be," continues the author "a fine field of experiment, to investigate the materia medica after this manner, but unfortunately experiments are not sanctioned in medicine, but in cases absolutely desperate, in which all known means have been tried without success, and this species of cases is not the most favourable for furnishing results on which we might calculate."

In a note to the twenty-fourth page of his work, Dr. Odier explains his method of using the tartrate of antimony and gives the rationale of its operation. He observes that in cases in which cinchona has failed, he had found excellent effects from the use of this article, and adds the following note:

"As this method, which is exclusively my own, may be of great utility, I think it my duty to add in this place some details, the knowledge of which may be necessary to make it intelligible. In giving the tartrate of antimony in dose, at first very small, but gradually increased, it has appeared to me, that the more considerable the intervals between the doses, the less sure are we that the patient will be able to bear them.

It is on this account I exhibit the remedy every two hours. The influence of habit is lost by degrees, unless it be continually

kept up, so that if, for example, after having borne in this manner a grain of the tartrate of antimony without nausea, we may lay aside the remedy for one or two days, we cannot afterwards commence with the same dose without producing vomiting. The interval of a night also is too long, not to produce to a certain degree the same effect, if you wish to recommence the remedy in the same dose at which you stopped the evening before, it will be found that sleep has already restored to the stomach its irritability, and that the patient can no longer bear the same doses, as the preceding night. On this account it is best to proceed in recommencing the increase of it every two hours. Thus, in place of adding the second day, eight grains of the to each dose of the solution, sixteen grains the third, twenty-four the fourth, and so one after another, as we might do if the acquired habit had not been weakened, I add successively only four, eight, twelve grains, &c. In this manner we may be almost assured, that the patient will at last come to bear the largest doses without vomiting or purging. The remedy has, above all, the good effect of keeping the belly open. If by accident, however, it produces nausea, as this may happen sometimes at the beginning of an exacerbation of the fever, we have nothing to do, but to diminish the dose two or three spoonfuls, and afterwards gradually to increase it; and if purging should come on, we can check it easily by one or two drops of liquid laudanum added to each dose of the solution.

“I observe, however, that although the remedy have no taste, or that it may easily be disguised, though it neither produce nausea nor any other sensible effect, it becomes so disagreeable to some patients, without their being able to say why, that we are obliged to relinquish its use; but then even the fever is already so much diminished, that the smallest dose of cinchona will suffice to cure it.” This note is introduced in the course of the author’s remarks on the treatment of intermittent fever; under the same head there is a note on the preparations and use of arsenic, and if there be any remedy, he observes, which can take the place of cinchona in the treatment of these fevers, it is arsenic. “I mean,” remarks he, in the note referred to, “the arseniate of potash, prepared after the manner of M. Guyton de Morveau and crystalized. It appears, however, from some observations which M. Dr. Peschier has had the

civility to communicate to me, that this salt has always an excess of acid, whilst in the crystals of the arseniate of soda, the arsenical acid is in a state of perfect saturation. You dissolve a grain of it in a dram of distilled water, and add any aromatic you please. This forms the mineral solution of Pearson. Of this give the patient every two or three hours, from three to twelve drops in the intervals of the paroxysm. This suffices to cut short the fever at once, and Dr. Peschier who has been led to make great use of it, assures me, he has never observed any bad effects, especially in the summer. M. Dr. Coindet has also employed it with great success in the Military Hospital." In a note to the history and treatment of cynanche oesophagea, the author gives a very interesting case treated with the extract of cicuta: "In 1783 I was called to see, in Switzerland, a lady twenty-one or twenty-two years of age, of sanguine temperament, very irritable, and possessing great sensibility. I found her afflicted with a slow fever, in consequence of a singular disease of the throat. I could perceive nothing unusual in the pharynx; but she could absolutely swallow nothing solid, neither could liquids pass but in a very small quantity at a time, very slowly, with great pain and difficulty. One might hear them descend as by cascades. At each stop, they produced severe suffering, spasms, contractions, and convulsive twitchings. They told me, that six weeks before she enjoyed perfect health, but during the catamenia, she had, while at tea, received news which had given her pain; the catamenia were suddenly checked; she had suffered an oppression of the heart, and had found it impossible to swallow any thing. Shortly, nervous affections supervened, with fever and pain. They had bled her, and had frequent recourse to baths, to vesicatories, to sinapisms, to antispasmodics, and to anodynes. These had all proved useless; I again tried many other remedies without success. Asses' milk did not pass any better than other aliments, and did her no good. An older physician was called into consultation. He advised a mercurial sirup, which very much increased the irritation and the pain. Cough supervened, or, to speak more properly, vomitings, which, every time the patient made any efforts to swallow, brought up purulent matter, tinged with blood, and which discovered very plainly some ulceration in the œsophagus. At the end of some months, I at last tried the extract of cicuta,

diffused in water, beginning with very small doses. She supported them much better than I had dared to hope ; and as it appeared from the first day to lessen her sufferings, the dose of it was augmented. It was gradually carried to eighty grains a day, and farther, with a success always increasing. My patient encouraged by these good effects of the remedy, persisted a long time in its use, and at length, in the space of five or six weeks, the deglutition became easy and natural, all the symptoms of the disease disappeared, and I effected a complete and permanent cure."

Under the head of interior inflammation, we find a description of the croup. The usual treatment, viz. emetics, bleeding, blistering, and tepid bath is carefully detailed, and as it may exist as a spasmodic affection of the organ which is its peculiar seat, those means are mentioned appropriate to other spasmodic affections. We are directed to be especially on our guard against the occurrence of inflammation even in this species. A note on the frequency with which this disease has occurred of late years, contains the following remarks :—" This disease, (croup,) has lately particularly attracted the attention of physicians and of the government. It has become a subject of great regard. One of the questions proposed by the college *Programme*, relates to its origin and actual frequency. The following is the manner in which I should have answered this question, had I entered into the competition.

We find without doubt in ancient authors some insulated observations, which have some relation to croup. But, certainly, this disease was incomparably more rare than that at present. I believe I might affirm, that these fifteen years at least in Geneva, it has been more common than it ever was before. I commenced the practice of medicine here at the end of the year 1773. From that period to the first of January 1784, I had seen but a single case of well characterized croup. But during the six first years, I saw a very great number of patients of every age in this quarter of the city, and in every class of society. In the six following years from the first of January 1784 to the end of 1793, and this was during six years in which my practice has been the most extensive, I have daily most carefully written down the history of all the patients I have seen, to the number of fourteen to fifteen thousand, among which

there are but two cases of croup, and besides, in one of these cases, the cure was so easy, and so promptly effected by a simple cataplasm, that although it presented the union of all the symptoms which characterized the disease, I was strongly tempted to consider it as an accidental and fugitive disease, rather than as true croup. If then I had been asked, in 1794, about the frequency of croup in Geneva, I should certainly have replied, that the disease there was very uncommon. Since then, however, it has become much more frequent, for during the last six years, in which my practice among the lower classes has been much less than before, I have clearly seen thirty cases, all of them more or less severe, and very well marked. To what is this increase to be ascribed? I am ignorant. It would be an useful labour to give the history of the revolutions which have taken place in diseases; the croup is not the only one whose frequency I have observed considerably increased, since I commenced the practice of medicine.”—p. 63.

On the use of blisters in rheumatism, we find the following remarks. A blister applied as Dr. Odier recommends, viz. for an hour or two merely to the part affected and renewed every four hours, produces no other sensible or apparent effect than a cessation of the pains, this renders the employment of the remedy easier and of more general utility. If you leave the vesicatory on the skin, more than two or three hours, it does not appear to have produced any effect, but, at the end of four or five hours, you will find a blister formed. The action of the vesicatory prolongs itself then in this case for some hours after its removal. There is reason to believe, that the same thing occurs when the plaister is left on less than two hours. For although then it neither produces redness nor a blister, it is scarcely less efficacious when thus employed, than when it is left a time sufficiently long to produce a sore.

White Oxide of Bismuth.

“THIS oxide produces nearly the same action on the stomach as the oxide of zinc in spasmodic diseases, but it irritates and occasions vomiting. Its prescription, therefore, to delicate persons requires precaution. In cases of this kind it will be prudent to unite it with magnesia, to prevent it from combining

with any free acid that may exist in the stomach, and thus acquiring an emetic property. It is necessary to observe also that this preparation is not a simple oxide of bismuth; it contains a small proportion of nitric acid, and forms a metallic sub-salt.

Brugnatelli, Pharmacopée Générale, 1811.

REMARKS.

The oxide or sub-muriate mentioned by Brugnatelli is directed to be prepared by adding two pounds of water to a saturated solution of one ounce of bismuth in nitric acid—the proportion of water, however, is too small. It is produced of a much superior quality by the formula of Dr. Moore of New York. When properly prepared, we have never known it to operate as an emetic; but in a few cases it has brought on, in persons who were dyspeptic and inclined to pulmonary complaints, a stricture across the chest, even in very small doses. Not long ago, a quantity of oxide of bismuth was given to one of the editors to examine, by a gentleman, who had prescribed a part of it to a patient, and on whom it operated violently as an emetic and cathartic, at two different times, even in a dose of one grain. Instead of the fine white, which the oxide, when well prepared, always exhibits, its colour was a dirty yellow and its texture almost granular. These qualities, induced him to suppose, either that it was the precipitate which is formed during the action of bismuth on undiluted nitric acid, or that too small a quantity of water had been employed to decompose its solution. In either case, probably, the decomposition would not be so complete, or rather, more nitric acid would be retained, which might impart an acrid property to the oxide. No foreign substance, after a careful examination could be detected in it.

The precipitate, thrown down from the nitric solution by water, is considered by Sir H. Davy as a pure oxide of bismuth. There is an experiment, however, which appears to indicate the presence of nitric acid. We have found, that during the solution of this white oxide, which had been very carefully prepared for medicinal purposes, in warm muriatic acid in its purest state, an effervescence takes place toward the end of the process; and that a mixed air, composed of oxy-muriatic, or chlorine and nitric oxide gases, is disengaged. The colour seen by transmitted light is reddish yellow, the red predominating

near the mouth of the vessel. The red colour was still more visible around a small quantity of the oxide, which adhered to the inner edge of the orifice of the vessel, and which had been moistened with muriatic acid. The production of the chlorine or oxy-muriatic acid gas on the theory of Mr. Davy might readily be accounted for on the supposition, that the oxygen of the oxide decomposed a portion of the muriatic acid, combining with its hydrogen to form water and disengaging more chlorine than was necessary to unite with the metallic bismuth, the superfluous quantity being evolved in the form of gas. But this mode will not account for the presence of nitric oxide gas. On the old theory, it may be supposed that the muriatic acid aided by heat, expelled the nitric acid from the oxide of bismuth; that that acid, at the moment of its disengagement, was partially decomposed, yielding oxygen to a part of the muriatic acid, which was converted into oxy-muriatic or chlorine gas. The remainder of the nitric acid, by the loss of a portion of its oxygen, was converted into nitric oxide gas, and this coming in contact with atmospheric oxygen in the vessel, combined with it, formed the nitrous acid vapour, which imparted to the air a reddish colour. Supposing, however, the theory of Sir H. Davy to be correct, and the oxide to contain nitric acid, the production of chlorine may be inferred to result from the partial decomposition of the nitric acid in its nascent state, a portion of the oxygen of the latter uniting with the hydrogen of the muriatic acid, by which both chlorine and nitrous gases would be evolved. It is not a little remarkable that two theories on the constitution and action of muriatic acid and oxy-muriatic gas, so much opposed to each other as those of Mr. Davy and M. Berthollet, should possess nearly the same facility in satisfactorily explaining most of the phenomena of their combinations, &c. G.

EXAMINATION OF SOME DISTILLED VINEGAR, CONTAINING
ACETATE OF LEAD.

By John Gorham, M. D.

HAVING had occasion, not long ago, to use distilled vinegar, I procured about eight ounces from an apothecary in this town, who had imported a quantity, of which this was a part, from New

York. Its taste was sweetish and astringent, followed by a slight degree of acidity, which led me to suspect that it contained acetate of lead. In order to ascertain this, I poured into the eight ounces a sufficient quantity of hydro-sulphuret of ammonia, the liquid immediately became turbid and nearly black, and a precipitate of the same colour very soon subsided. This substance when collected on a filtre, dried and exposed to the flame of a blow-pipe, afforded about three grains of metallic lead. These three grains combined with oxygen in the form of yellow oxide, with acetic acid and water sufficient to constitute the salt, would have formed between 5 and 6 grains of the super-acetate or sugar of lead. It cannot be supposed that this salt was deliberately added to the distilled vinegar by the artist, because no advantage could possibly be expected from the sophistication; nor is it more probable either that it was distilled over, or was accidentally mixed with the vinegar. It is more reasonable to suppose that it was formed during the distillation in consequence of the use of a leaden capital or pipe to condense and convey off the distilled liquid, its surface being oxidized by the agency of the acid, and the oxide afterwards combining with the latter to form this poisonous salt. As distilled vinegar is employed in some quantity in medicine, its use, when thus sophisticated, might perhaps be followed by injurious consequences, and if the formation of this salt be owing to the nature of the apparatus employed for distilling vinegar, lead ought no longer to constitute a part of that apparatus.

The presence of lead may also be detected by sulphuric acid and the neutral sulphates, which throw down a white sulphate very sparingly soluble in acetic acid; and by the alkaline carbonates, which precipitate a salt, soluble with effervescence in distilled vinegar.

April 24th, 1814.

REVIEW.

Report of the Committee appointed by the Medical Society of the county of Saratoga, (N. Y.) to investigate the nature and causes of the late Epidemic, as it prevailed in this county, together with the most successful modes of practice in the same. Published by order of the Society. Waterford, Printed by Charles Webster, October 13th, 1813.

AN epidemic disease, the combination of whose symptoms is in any degree new or unusual, at first necessarily produces some doubt and indecision in the practice of physicians. The earliest cases are treated upon the ground of experiment, and the application of general principles merely; so that a great diversity can hardly fail to appear in the procedure of different practitioners. A correct and uniform practice cannot be expected to prevail generally, until physicians by a liberal intercourse, a comparison of the history, treatment and results of a variety of cases, can draw inferences sufficiently extensive, to throw a suitable light on the character of the disease, and the indications for its cure.

It is highly honourable to those parts of our country, in which an alarming disease has within a few years made its appearance, that very early exertions have been used to collect all the important facts relative to its history and management, and to make amends for a deficient experience in the disease, by assembling and contrasting the observations of many individuals. Of this kind have been the proceedings of the Medical Society of Saratoga, the result of which is the pamphlet now before us.

This society having appointed a committee to investigate the nature of the epidemic, which had made its appearance in their vicinity; that committee addressed a circular letter to each member of the society, and to other physicians in the neighborhood. In their circular, they requested particular information

relative to the time of appearance of the epidemic, and the fevers which preceded it; its general and distinguishing symptoms; the mode of treatment with its result; the number of cases; the number of deaths, together with the preceding treatment; the appearances on dissection, &c. &c.

In answer to this circular the committee report, that they have received answers from a considerable number of physicians, mentioning one thousand seven hundred and three cases of the epidemic, and eighty-four deaths—a mortality equal to one in twenty-one. They express their regret, that a great number of physicians have neglected to report, in the circuits of some of whom the mortality was very great, amounting to at least one case in eight.

The following account of the appearance, symptoms, and treatment of the disease, is collected from such communications and information, as the committee were able to obtain.

“The *Bilious Pneumonia*” the name which the committee think proper to give the disease “became epidemic in some towns in this county, early in December 1812, in most others, in January 1813. In one or two, however, agreeably to reports received, it did not appear earlier than the first of February. A number of sporadic cases appeared in different parts of the country in the latter part of October and in November; but it could not, from its frequency or its power of converting other diseases into itself, be properly styled epidemic in any place earlier than December.

“It was preceded in the eastern part of the county, by Bilious Intermittent and Remittent fevers. Diarrhœas, Dysenteries, and other complaints, arising from Marsh Miasma. In the western division of the county, Typhus and Inflammatory fevers prevailed in addition to the above.

“The first stage commences with a cold chill, which has sometimes lasted from four to twenty-four hours or longer, but it generally continues from thirty minutes to two hours. This chill, which differs not essentially (except in the severity of the ague) from those which commonly precede Pneumonia, is accompanied with coldness of the extremities.

“During the continuance of the chill, the patient is generally afflicted with a violent pain in the head, back, loins, and some part of the thorax. It sometimes at the first extends to the

limbs resembling acute rheumatism ; at other times to the bowels, resembling enteritis. The pain in most instances becomes fixed in some portion of the membranes of the lungs. Some physicians have stated that it is most frequently in the right side ; others say in the left, and others as frequently in one side as the other. Respiration is laborious and difficult, frequently attended with acute pain or a sense of suffocation. The eye is watery and red, the tongue covered with a thin white pellicle, frequently tinged with yellow near the root. Some cases are noticed in which the tongue was of a fiery red without any pellicle, but generally most in the first days of the complaint. The patient is racked with a cough, which is at first dry and suffocating, but soon becomes harsh and deep, raising a thin tenacious mucus ; on the third or fourth day the matter expectorated becomes thicker, less tenacious, and frequently striped or mixed with blood. During the cold stage the pulse is weak, small, and in some instances, where the chill continued long, imperceptible at the wrist. After the commencement of the hot stage, the pulse becomes small and oppressed, causing that sensation in the finger which is frequent in severe peripneumonia, beating between seventy and a hundred strokes in a minute. The patient feels a great anxiety and depression of spirits, but (agreeably to the report of a number of physicians) less muscular debility than is common in acute diseases. Many in the first days of the fever, who from vertigo are unable to sit up, in a recumbent position feel their strength but little impaired. There are two paroxysms of fever in twenty-four hours, that in the evening the highest. The patient, restless and wakeful, often denied the refreshment of sleep till the crisis. Nausea is a common symptom, and vomiting a frequent one ; the bowels on the first days of the fever for the most part costive ; the skin about the temperature common in peripneumony ; the face generally red and bloated, but in many cases pale and cadaverous.

“ Second stage : when the fever did not terminate about the fifth or seventh day, by a favorable crisis, the following symptoms generally ensued ; the pulse became full, soft and weak, from ninety to one hundred and ten strokes in a minute ; the tunica adnata of the eye and skin yellow ; the tongue dry and coated with a dark brown, except in a few cases, where it was smooth and glazed of a dark red ; heat and dryness of the skin, much more con-

siderable than in the former stage ; the bowels swollen and elastic. Uncommonly large quantities of dark bile were discharged by the operation of emetics and cathartics.

“ From about the first of February till the first of April, many cases of the fever in different parts of the county, as appears by the reports before us, ran a quick and rapid course, frequently passing through the first and second stage in a few hours, putting on the symptoms of the Typhus Gravior, in its most malignant form, and often proving mortal in four or five days.

“ *Treatment.*—From the reports received, we find that physicians differed considerably in their methods of treating the epidemic. Some placed almost their whole reliance on copious sweats, produced by external heat ; others, an early use of opium, wine, brandy, and the bark in as large quantities as the stomach would retain ; but far the greater number recommended venesection, emetics, cathartics and diaphoretics, keeping the patient cool, and strictly adhering to the antiphlogistic regimen. But from the whole together, with our own observations in practice, we have thought proper to recommend the following, as the most successful mode of treatment in the fever as it appeared in December, January, April, May, June and July, and in a large majority of cases in February and March, except such as early put on symptoms of malignancy.

“ *First.* If called before the cold chill is gone, we advise to shorten it as much as possible, which is in general easily effected by some gentle stimulant internally given, and warmth externally applied. As soon as the fever rose, where the pulse would bear it, we bled moderately ; which sometimes required repeating on the second day, very rarely on the third. The loss of twenty or thirty ounces of blood generally removed the pneumonic symptoms as perfectly as sixty or seventy have done for several winters past. After the first bleeding, if the pain in the thorax was so far relieved as to render it safe, we administer a full dose of tartarized antimony and calomel, sufficient to cause a brisk operation as an emetic and cathartic ; where this was thought dangerous, calomel per se or combined with jalap or scammony. As soon as the operation was over, we applied warm fomentations of vinegar or spirits over the seat of local pain, and gave diaphoretics, which seldom failed to relieve the pain and produce a free perspiration, rendering the symptoms mild and leaving little for

the physicians to do, more than to continue the perspiration, and by the use of pectorals to cause a free expectoration. The diaphoretic most highly approved by a majority of those physicians who have reported, is a powder nearly similar to Dovers. As a pectoral, *Digitalis* and *Radix scillæ* were very useful, *vinum antimonii* and *laudanum* have also been highly recommended. Frequent and severe cathartics to cleanse the stomach and bowels are absolutely necessary in every stage of the disease. Happily we have it in our power to state, that physicians have generally agreed in the opinion, that uncommonly large doses of cathartics were necessary to produce an operation; that their frequent repetition was attended with happy effects; that external heat over the local pain was very serviceable; that epispastics after the inflammatory symptoms began to subside, applied immediately over the part affected, were very useful in removing local pain; that calomel in small doses, where the congestion of the vessels of the lungs or liver was considerable, was attended with its usual good effects, but that early in the disease, as it increased the stimulus without overcoming the morbid excitement, it was of little or no use, and in some cases injurious; that sweats from external heat in the forming state of the fever, were often useful in throwing it off, and preventing it from running a course, that after the fever was fully formed they were generally pernicious; that they were never an indifferent remedy, always beneficial or injurious; that the latter was most frequently the case, as the fever advanced through its forming state too rapidly for their being used with safety; that hemlock* another popular remedy was generally hurtful, and that should the fever again make its appearance on the approach of winter it cannot be too strictly prohibited, as it has unquestionably been the cause of many deaths. We have no report which approves the use of hemlock, cortex cinchona, wine, or brandy, in the first stage of the fever, but they generally agree in recommending the antiphlogistic regimen and cathartics, and most of them the use of venesection and emetics.

“ In the second or bilious stage of the epidemic, the physicians as appears by their reports are not so well agreed. A number, whose standings are very respectable, recommend, as soon as the inflammation subsides, to introduce the bark, opium, wine, and

* Hemlock spruce, *Pinus Canadensis*.—ED.

brandy, as rapidly as the stomach will bear ; to avoid cathartics, and to give enemias to keep the bowels open. And from the success with which this practice was attended, they conclude their mode of treatment must be correct. Others equally respectable urge that frequent cathartics and emetics, with a continuation of diaphoretics, are all that is necessary in this stage of the fever, alleging that such has been the irritable state of the muscular fibres, that they will not bear the bark, columbo, or any other considerable tonic ; that they with difficulty bear wine or brandy, especially the latter ; that patients are found to recover fastest under a nutritious diet, and exercise in the open air.

“ This difference may in part result from the different degrees of malignancy with which the epidemic has appeared in different districts. That the mortality has been much more considerable under the tonic and stimulating practice than under the other cannot be denied, but this may arise from the early malignancy of the disease ; for under those symptoms every physician must acknowledge far the greater portion of deaths have taken place, and that some malignant cases have baffled every effort of the physician, under all the different methods of treatment of which we have heard.

“ About the fifteenth or twentieth of January, many cases of the fever occurred where the pulse was so weak as to forbid the use of the lancet. This species of cases continued to increase till the close of the epidemic. Some physicians say one third, others one fourth of the whole were of this description. In other respects, they required the same treatment as other cases. It further appears that in the months of February and March, there were in many parts of the county various cases which ran rapidly through the inflammatory stage into one of a high state of malignancy, scarce inferior to the plague ; attended with great muscular debility, cold chills, sometimes distressing ague, violent pain in the side, breast, head or extremities ; torpor on the surface ; pulse sometimes small and hard, and often slow and irregular ; the tongue in the first stage dry and white, in the last brown and dark ; skin dry and hot, as in other malignant diseases ; breathing difficult and laborious, and a hacking cough ; expectorating matter, sometimes viscid and glairy, at others resembling blood and mucus agitated together. In these cases the patient would not bear the loss of any blood. Equal parts of tartarised

antimony and calomel were found to throw off large quantities of dark foetid bile. Friction with vinegar and Cayenne pepper, and the application of cantharides to the extremities, till perspiration was produced, were found to be serviceable. About the second or third day, brandy and the diffusible stimulants became necessary, followed by the rad. serp. virg. senaka snake root, colubabo, bark, quassia, &c. About the first of April as above stated the symptoms appeared far less malignant and more readily yielded to medicine. By the last of that month, the fever in some parts of the county disappeared. In May and the early part of June, cases of the fever prevailed in many places, but in July and August it generally lost its pneumonic symptoms. The diseases then became remittent and intermittent fevers, cholera morbus, dysenteries, and diarrhœas, which were more prevalent in those months than they have before been, within twelve or fourteen years in this county. An unusual number of these cases put on symptoms of malignancy, but the mortality has been probably less than one in a hundred.

“ Your committee would further observe, that in our opinion the epidemic is not a new disease. We have discovered no symptoms which are uncommon in those mixed fevers which occur in the fall, spring and winter, to which the system is predisposed by the absorption of marsh miasma, and of which that state of the atmosphere, which produces pneumonic inflammation, and cold externally applied are the exciting causes. It has not been essentially different from those peripneumonies which visited us fifteen or twenty years since, except that cases of malignancy have been more frequent, and as far as we have been able to learn, it has yielded to the same modes of treatment. The greater malignancy of the epidemic may probably, in part, be attributed to the openness of the early part of the winter, and to the freedom of the ground from frost, till near the middle of January. Among the causes which produced such an astonishing mortality, we may include the alexipharmic or sweating practice, which was so exceeding popular with a great share of the people, that it was with great difficulty the physician could induce his patients to adopt the antiphlogistic regimen; the unfounded prejudices which some physicians entertained against the use of the lancet, and its too copious use by others. The former either wholly neglected the inflammatory stage, or relied too implicitly on cathar-

tics, and the latter appear to have forgotten that the synochus* would shortly terminate in a synocha† or typhus, and would not bear the liberal evacuations which had been absolutely necessary for the last twelve years.

“ Your Committee are likewise fully of the opinion, that should the fever again appear, and physicians use the mode of treatment here prescribed, that instead of losing one patient in five, seven, or twenty-one, they would not lose one in sixty.

“ It appears from the reports before us that the fifth, seventh, and fourteenth days were often critical. The crisis sometimes fell on the third day, rarely on the ninth, and some cases run beyond the fourteenth day, which last gradually wore off without any perceptible crisis.

“ Your committee have learned of but one case of dissection, which was performed so long after death, that no conclusion could be safely drawn from it. The fever during its continuance had, in common with other epidemics, the power of converting all other diseases into itself, unless we except a few cases of typhus mitior, which appeared in places where the epidemic was most rife and malignant. On reflection, your committee are of opinion, that these cases are merely a variety of the prevailing complaint. The following circumstances strengthen this opinion. Many of the cases, even in the same towns, bore evident symptoms of the typhus gravior ; and in the city of Albany, the typhoid tendency of the fever induced a respectable physician to call the epidemic the *Peripneumonia Typhoides*.

“ In many parts of the country a rash or scarleina mitis was prevalent from the last of December, till the first of April, which was infectious, but principally confined to children ; it was so mild, as hardly to require medical aid. In those cases which ran a course of fever, the same symptoms were observed as in the epidemic, and the same method of treatment was required. The measles and pertussis were frequent in the latter part of winter, but neither of them were generally epidemic. The latter was uncommonly mortal, frequently in children terminating in the scrofula of the mesenteric glands. It is observable, that in the winter a great number of aged people died suddenly, without much previous disease, and that there was an unusual number of

* Synocha?

† Synochus? ED.

deaths from the phthisis pulmonalis. The only domestic remedies used for the epidemic, which have come within our knowledge, are sweats from external heat and decoctions of hemlock internally given. Both of these, as we have before stated, were highly injurious. In many instances they occasioned a rapid progress of the fever into its most malignant state, which suddenly and unexpectedly terminated in death. Even where medical aid was called, soon after their use, it was exceedingly difficult to check the strong malignancy of the disease, and the patients slowly recovered, after a long and distressing course of fever. It is the unanimous opinion of your committee, that those remedies are extremely hazardous, and cannot be used with too much caution. They ought never to be administered unless it be in the forming state of the fever, or for a mere cold. It is a duty which humanity requires of every medical man, to impress upon the minds of the people the extreme hazard of relying upon reports from abroad, with respect to the efficacy of medicines, in any disease; he ought to inform them that a disease scarce ever retains the same character in different districts; that for a physician to be governed by these reports, or to prescribe to the name, rather than the symptoms of a complaint, is to render himself the follower of every stupid and tale-bearing empiric; and that medicine can never be useful, when administered without a due regard to the predisposing causes of the fever, which must vary with every change of situation."

Traité Complet de la Chaux Carbonatée et de l'Arragonite, auquel on a joint une introduction à la Minéralogie en général, une Théorie de la cristallisation, et son application, ainsi que celle du Calcul, à la détermination des formes cristallines de ces deux substances.—Par M. Le Comte de Bournon, membre de la Société Royale de Londres, &c. Londres, chez William Phillips, 3 vols. 4to, 1808.

THE Count de Bournon, the author of this splendid work, is a nobleman, who sought an asylum in England from the horrors of the French revolution. He resided, previous to that period, in the city of Grenoble, the capital of Dauphiny, situated at the

foot of the Alps, and there had the best opportunity of studying among their sublime scenes, the most interesting facts in mineralogy and geology. His attention was fixed to this pursuit by the work of the celebrated De Lisle on crystallography, for whom he conceived so high a respect, that he removed to Paris and placed himself under his tuition. On leaving his preceptor he returned to his Alpine home, and gives in his work an animating description of his happiness in this retreat. "Happy," says he, "as much as it was possible to be in my domestic establishment, possessing friends and knowing no other society than theirs; inhabiting a happy and flourishing kingdom, governed by the best, the mildest, the most virtuous, as he has been the most unfortunate of kings, what situation could be more fortunate for the study of the sciences, for which a state of security and tranquillity of mind constitutes the greatest of good and the most absolute of wants."

From Grenoble De Bournon made frequent excursions to the other provinces of France, and successfully examined the mineralogical productions of Dauphiny, of the Lyonnais, of Burgundy, Franche Comté, Champagne, Lorrain and Auvergne, collecting in his rout specimens of every thing which could add value to his cabinet. The mountains and extinct volcanos of Auvergne, which have always attracted the attention of the mineralogist and geologist were accurately examined by him and the interesting facts which were there developed, were not lost on his inquisitive mind.

At this period he became known to the philosophers of Paris by the publication of a work entitled, "Essay on the Lithology of the neighbourhood of St. Etienne," and his reputation was rapidly increasing, when the revolution which "covered France with blood, with ashes and with tears" commenced, and obliged him to fly from his country, his fortune and his friends, to become a simple individual in the world, totally indifferent to the unknown beings by whom he was surrounded, and possessing no other recommendation than that of being unfortunate. He and his family first took refuge in Germany; they afterwards passed over to England, and there the science which he had cultivated in France only as a source of amusement constituted his means of support, and more fortunate than many of the unhappy beings who accompanied him, his exertions soon placed

him beyond the reach of absolute want. In pursuing his avocations he had access to the most extensive and most splendid cabinets in Great-Britain, particularly those of Mr. Greville, of Sir John St. Aubyn, and of Sir Abraham Hume. It was his business to arrange and increase these collections, opportunities were thus afforded him of acquiring an immense stock of mineralogical facts, and of perfecting the knowledge which he had obtained in this science previous to his flight from his native country.*

It appears by the preliminary discourse, that it was the intention of the author to have published a system of mineralogy on a scale, the size and perfection of which will be readily imagined, when it is known that this Treatise on, *carbonated lime*, which was to make only a small part, occupies three volumes in quarto; but circumstances which we must ever regret, have, it seems, occurred to prevent the execution of this plan and the title which was at first given to the work, a complete Treatise on mineralogy, has been altered to the one we are now to describe.

About half of the first volume is occupied in observations on the general and particular characters of minerals and on their classification. With respect to the best mode of arranging the subjects of mineralogy the author remarks, that previous to the appearance of M. Haüy's work, he had frequently perceived the insufficiency and defect of those classifications which had been given, and the necessity of forming one on a clearer and more simple method. After the appearance of Haüy's book, it seemed to him that his own plan, which in many parts coincided with that of the philosopher above mentioned, possessed the advantage of placing mineral substances in divisions the best calculated to give an idea of their mutual relations, and that it introduced more order and method into the arrangement of a collection of minerals. Mineral substances are divided by him into eight classes, or principal divisions. 1. Stones which are simple, or composed only of a single earth. 2. Compound stones, or those in which are recognized several different earths. 3. The diamond, which the author cannot, notwithstanding the experiments made on it, yet assimilate with carbon. 4. Aggregate stones or rocks. 5. Stones of an igneous origin. 6. Salts, properly so called. 7. Substances inflammable, but

* Introduction.

not metallic. 8. Metallic substances. "The first of these divisions bears the name of order; this class contains three of them. The first order includes stones produced by the union of a single earth with a single acid; or simple acidiferous stones. The second order that in which chemistry has not been able to detect more than one earth nor any acid whatsoever, or simple stones without any known acid. The third contains stones arising from the combination of a single earth with an alkali and a single acid, or simple acidiferous alkaline stones. In the first of these three orders, the earth forms the division of genus, and the acid which modifies them determines the species; when, however, the essential and specific characters are demonstrated only in the combination of the same earth and the same acid, many species are included; a fact which exists, for example, in carbonate of lime, and which has forced me to consider the acid in it as merely designating a species of family or a general species, as causes, whose nature we cannot determine, divide them into particular species or species properly so called. The varieties, finally, are drawn from the aspects under which the species present themselves; aspects resulting from the different circumstances which happened at their formation, as well as the different mixtures which have been incorporated into their substance.

"The second order includes only two genera which are determined by the two quartzose and argillaceous earths. As no modifying acid exists in the stones belonging to this order, it is extremely difficult to determine the species. This difficulty is so much the greater in the first of these two genera, that of quartzose earth, because of the three species into which I have endeavoured to divide them, two of them, those which belong to calcedony, and to the substance, of which opal is an alteration, are deprived of the character of crystallization.

"The third order also includes but two known genera; the earth and alkali form the genus, and the acid determine the species."

The account of all the other classes is referred to the table of classification which is soon to follow the work itself. He then proceeds:—"It is then, as we have just seen, by the concurrence of chemical and mineralogical characters, that the stones which compose the first class are arranged. The min-

eralogical characters determine the nature of the difference either in structure or in properties, which essentially constitutes the species. The chemical, the nature, and the proportions of the principal bodies which enter into their composition."

A species considered mineralogically is defined by M. Bournon in the language of Haüy, "A union of integrant moleculæ all similar to each other, each being composed of the same elements in the same proportions." "From the nature of the species, these characters ought to bear equally on each of the two parts into which the definition we have just given is naturally divided. 1° on the integrant moleculæ and their combinations. 2° on the constituent parts, and the proportions in which they unite. The characters which belong to the first of these parts, are all to be referred to crystallography. Those which belong to the second are either physical or chemical; the chemical determine the natures of the elements, that enter into the composition of the integrant moleculæ, as well as the manner in which they are proportioned; they determine also the action of different menstrua on its substance, such as water, salts and acids. The physical characters which very certainly depend on the nature as well as the proportions of the constituent moleculæ, are hardness and specific gravity. There still exist three other physical characters which we use, and of the nature of which we have but few data. These three characters are double refraction, electricity, and phosphorescence."

This method of considering the different properties of minerals cannot be better exemplified, than by inserting the Count de Bournon's arrangement with respect to the specific characters of carbonated lime in its purest state, which we prefer to state here, that the reader may form his own judgment of its value, though, by doing so, we pass over a mass of interesting observations on the formation of minerals, &c.

ESSENTIAL CHARACTERS.

Crystallographical.

Primitive Crystal.—Obtuse rhomboid, the measure of the angles of its plane rhombs being 101°, 32' and 78°, 28'.

This crystal is divided with great facility, parallel to each of its planes.

Integrant molecule.—A triedral pyramid with inclined bases. Its longitudinal edges meet in two acute angles of 37° , $45'$, and in one obtuse angle of 104° , $29'$. The angles of incidence of the terminal faces on the obtuse edges are 108° , $26'$, and 71° , $34'$, *fracture*, lamellated.

PHYSICAL CHARACTERS.

Specific gravity 27, 17; the mean proportion of those of twelve of the most perfect and transparent crystals, the heaviest being 27, 48, and the highest 26, 86.

Hardness.—Scratched by the brass commonly employed in England in the manufacture of philosophical instruments; and scratching it in turn, but with less facility. *Refraction*, double. *Electricity by friction*, none.

CHEMICAL CHARACTERS.

Action of Acids.—Dissolves with lively effervescence in nitric acid.

Action of Fire.—Infusible before the blow-pipe without addition, but reducible to quicklime by the loss of carbonic acid.

Analysis.—The first analysis of carbonated lime by Bergman, indicated, beside lime and carbonic acid, eleven parts of water, distinguished by the name of water of crystallization; but this analysis repeated by the most skilful of the present chemists has proved, that there does not exist in it any water, or, at least, that it contains but an extremely small quantity. Its constituent parts, according to Vauquelin, are of

Lime	-	-	-	-	-	56
Carbonic acid	-	-	-	-	-	44

ACCIDENTAL CHARACTERS.

Colour.—Most usually colourless. Sometimes, however, it exhibits most of the colours, but rarely. The most common is a yellowish brown, more or less deep.

Phosphorescence.—Carbonated lime of a deep yellowish brown, and the colour of which disappears in the fire is commonly phosphorescent, &c. &c.*

* The reader will observe, that the specific gravity of carbonated lime is marked in numbers differing essentially from those which are generally employed. The reason of this is, that the author has chosen

We shall pass over in silence the observations of the author on the characters of minerals, such as their hardness, fracture, refraction, electricity, colour, phosphorescence, *chatoyement* magnetism, adhesion to the tongue, as well as those on the employment of external characters, and on the principal substances of minerals, as they contain nothing more than what is already familiar to the mineralogist; and proceed to state the theories of the Count on the subjects of light and caloric.

With regard to the latter, the author has adopted the theory which has generally been regarded as originating with the chemists. He believes that caloric like oxygen, hydrogen, &c. is one of the elementary fluids of nature, and can be recognised only by its effects. One of its properties is *heat*, and this property is developed only by its motion, for in a state of repose caloric exhibits no heat, and its presence could not be suspected, unless, perhaps, by some of its other properties. The intensity varies with the increase or diminution of motion, and to this variation has been given the name of *temperature*.

One of the principal causes of the motion which it continually impresses on every object in nature, appears to reside in its strong attraction for all bodies. This attraction, with respect to minerals, seems to take place between it and their integrant moleculæ. It acts on bodies in two ways; in the one, in consequence of its attraction for the integrant moleculæ, it unites with and keeps them separated from each other, the caloric then becomes *fixed* and continues in that state so long as there takes place no change in their temperatures; in the other, it acts like an elastic fluid continually tending to an equilibrium, penetrating more or less into the substance of all bodies, and producing in

the method of M. Brisson in preference to that which philosophers have generally pursued. The common standard as is well known is unity; in this work it is ten and the relative weight is thus found. "Suppose I wish to determine the specific gravity of a piece of carbonated lime, the absolute weight of which in the air is 30, 22 grains, I weigh it afterwards in water and finding that its weight is then 19, 16, I subtract the last number from 30, 22. and the remainder 11, 6, represent the weight of the water displaced. The following proportion being then established 11, 06: 30, 22 :: 10: X the fourth term, which will be 27, 32, it will give the specific gravity of the specimen." As all mineralogists, however, are agreed in the use of the other method, it is to be regretted, that it has not also been adopted by the Count de Bournon.

them a change of temperature. Those bodies which have a strong attraction for caloric and fix it in large proportion such as the combustibles, set it at liberty or in motion by the decomposition or destruction of their integrant moleculæ. It is then disengaged in the form of heat. Some admit it with difficulty, and others appear capable of containing only that which was originally fixed between their moleculæ, such are the bodies which are of *difficult fusion* or are quite *infusible*. This attraction is different from that which has acquired the name of chemical affinity. In this the moleculæ of caloric surround the integrant moleculæ of other bodies and form an atmosphere of caloric, and they constitute in each molecule an independent system. This attractive force can in no case be rendered perfectly null, and there is no body, even in the lowest temperature whose moleculæ are not environed with a little atmosphere of caloric. Consequently when a body has its temperature augmented, which is occasioned by an increase of motion, the attraction between its integrant moleculæ and the moleculæ of caloric will be proportionably increased, and a larger atmosphere of this fluid will be fixed around them. By this accession of *free* and *fixed* caloric, the temperature will be elevated, the moleculæ will be further separated and an augmentation of volume must be the result. If the moleculæ are not separated beyond the sphere of their mutual attraction, the body, though rendered less dense, will still preserve its solidity; if otherwise they become dissolved to saturation in caloric. From these data the author explains the phenomena presented by bodies which are elastic, or incompressible, or compressible, but inelastic.

There are some bodies which appear to have a part of the caloric, previously fixed in their substance, set in motion by the free caloric, by which their temperature is elevated much higher than would have been produced by that to which they were exposed. These bodies are among the class of fusible. It is possible that this motion may occasion the loss of a part of the fixed caloric, the integrant parts thus approximating to each other and remaining in that state after the temperature is reduced so as to produce a greater degree of hardness; such may be the case with the steatites.

The force of attraction between the moleculæ of caloric and of other bodies is supposed to be absolutely necessary to coun-

terbalance the tendency of the *moleculæ* of the latter to unite and form solid impenetrable masses. The author even infers that the particles of caloric themselves are separated by others infinitely more subtle.

The difference between latent and sensible caloric is explained from these data, and by keeping in view what has already been mentioned, it will be readily understood.

Caloric may be united with and again disengaged from bodies without producing any change, either in the nature or the forms of their integrant *moleculæ*; of course this union bears no relation to that which takes place in consequence of the exertion of chemical affinity, and is designated by the author by the term *attraction by approach*.

In the process of vitrification it is supposed that a chemical combination takes place between the materials and caloric; and it is the Count de Bournon's opinion, that among those stones which by some mineralogists have been regarded as owing their crystallization to the action of fire, and by others to previous solution in a fluid, some of them may be referred to the former and some to the latter.

Such is the substance of the author's observations on the nature and operation of caloric. In support of his hypothesis he has certainly entered more minutely into the subject, and presented us with a more complete developement of its principles, than we recollect to have seen expressed in any other work. It is ingenious, and assuming certain data as true—for example, the material existence of caloric and the strong attraction of its particles for those of other bodies, we are disposed to think that it may be considered as satisfactory as any which has yet appeared. Some of the details are undoubtedly fanciful, and would require more faith than we are disposed to bestow, to be believed; and when we take into view the great obscurity of this subject, and the little accurate knowledge we possess of the real essence of caloric, it will be thought the safest and wisest way to wait until more facts have been collected, and the relations of heat more extensively ascertained.

We shall now say a few words on the author's theory of light.

He believes in the hypothesis first advanced by Des Cartes, afterwards adopted and defended by Euler, and more lately by the Baron de Marivets, that light is owing to a very subtle fluid

which fills the universe, and is put in motion by the sun ; in opposition to the theory proposed by Newton, and embraced by almost all succeeding philosophers, which infers that the fluid of light is incessantly projected from the surface of the sun, and that its particles succeed each other without any intermission.—His arguments are,

1. That the necessary velocity of its particles on the last supposition, is incredible and revolting to the mind.
2. That notwithstanding its excessive quickness of motion, it produces on the lightest and the most mobile of bodies not the least perceptible action.
3. That in the hypothesis of Newton, it is supposed that the light projected from the sun never returns, and with respect to that planet, is absolutely lost. It is incredible, therefore, that a quantity of light, equal to a solid sphere of 70,000,000 of leagues in diameter, passing from the sun every eight minutes, since the world began, should not ere this have produced a diminution of volume in the source whence so much was derived. It is still more incredible, when we include the light sent to other planets.
4. That the light thus lost by the sun does not appear to be gained by the earth ; for no change which can be directly referred to it, has been perceived.
5. The different bodies which we ordinarily use in the production of artificial light being, with respect to us, in the relation of the sun, offer us opportunities of testing the truth of the last hypothesis. If, in a still and very dark night, a person, on an elevated point, produce a bright spark by striking flint and steel together, it will be perceived by another at the distance of half a league ; supposing others to be placed at every point of the circumference, it will be equally perceptible to each ; hence it follows, by Newton's hypothesis, that the quantity of light, produced by the spark, must be sufficient to fill a space or constitute a sphere equal to a league in diameter, and all at the same instant of time. "What is the force which would have sent the molecules of this spark, so incredibly dilated, to this distance, and with such velocity?"

"If we enter a chamber perfectly dark, with a lighted candle, it is immediately filled with light, and the objects it contains are illuminated ; if the candle be extinguished, every thing is instantly enveloped in profound darkness, but why?"

Suppose an apartment hermetically sealed, and in which a large number of candles has been shedding a brilliant light for

many hours ; the light which, according to the theory of emission, must have been constantly emanating from the burning bodies, must have passed in right lines, have struck indifferently on all obstacles, been reflected by some and arrested in its motion by others, the walls preventing its escape ; now let a person in this apartment extinguish at the same moment the whole of these candles, and the most profound darkness will instantly succeed the most brilliant light. "How could this extinction cause all this mass of light, which had been poured forth from so many luminous bodies for many hours, so suddenly to disappear ? What became of the light at the moment ? The extinction of the candles has caused it to disappear, and there remain no traces of all this immense quantity of light." 6. That the hypothesis which considers light as an elastic fluid diffused through space, offers less difficulties to the mind in the conception of its phenomena.

Such are the opinions of the Count de Bournon on the nature of light ; the details are interesting and well worth the time employed in their perusal ; but we cannot stop here to consider them, and shall, therefore, pass to his observations on the combination of light with minerals.

He supposes it to be present much more commonly than is suspected, in mineral bodies, and to exist in them, like caloric, in a state either of simple interposition, but of repose, or in that of combination by approach, or finally of chemical combination. Of the truth of this, phosphorescence is considered as a convincing proof.

There is a third substance in which light and caloric are uniformly seen combined, and that is fire. But what is fire ? This is a question which the author has often proposed to himself, and which particularly obtruded itself, in considering the effects produced by a very common circumstance, the inflammation of tinder by a spark from flint and steel when struck together. The manner in which he explains this phenomenon whether just or not, is ingenious. Quartz, and particularly calcedonic substances contain a considerable portion of the fluid of light. Two pieces of this stone struck together give out sparks, but disengage no heat, a fact which, he says, contradicts the accounts we read in voyages and travels, of savages or those who are unfortunately shipwrecked on desert islands, procuring the fire

they so much needed, by striking two pebbles together and communicating it to dry wood or leaves. On the other hand steel contains a great quantity of caloric, as is proved by the great heat generated during its friction or percussion. When, therefore, the flint strikes upon the steel, one part of the molecules of the fluid of light, accumulated in the quartz, is set at liberty and in motion, while a part of the molecules of caloric, contained in the steel, recovers its liberty and motion. But caloric in motion has so strong an attraction for oxygen, that it will unite with it, so soon as it becomes free from its other combinations. In consequence it combines with the oxygen of the atmosphere in which the operation is performed, and at the same time with the fluid of light just disengaged from the silex. From this combination results a violent fire which burns the little particles of steel thrown off by the percussion. This compound is soon destroyed, because the oxygen unites with the iron, and the caloric and fluid of light being set at liberty, produce heat and light.

With respect to this hypothesis we may observe, that there appears to be no necessity for supposing such an affinity of caloric for oxygen to exist. The fact itself is explained with equal satisfaction on the common idea, that the temperature of the iron is raised so high by the percussion as to enable it to combine with oxygen and form the black oxide which is found after the operation in the form of distinct minute globules, perfectly similar to those produced by the combustion of that metal in oxygen gas. The source of the caloric and light, however, have not been so amply and minutely detailed.

Of a work like this it cannot be expected, that we should enter on the details; we have, therefore, devoted our pages to those portions which are calculated from the nature of their subjects to attract most attention, and arouse a spirit of philosophical speculation. The industry and the sagacity of the author will readily be acknowledged, when it is known that the last half of the first volume, and the first part of the second include the description of no less than *six hundred and sixteen* varieties of distinct forms of carbonated lime, belonging to *fifty-nine* different modifications; and that the last part of the second volume, besides a very interesting application of the theory of calculation to the determination of the crystallization

of the carbonate of lime, contains an account of forty-nine different forms of arragonite, included in nine modifications. The last volume is composed entirely of diagrams referred to in the preceding descriptions of minerals and the theory of crystallization.

Feeling as we do, a mixed sentiment of gratitude and commiseration for the Count de Bournon, we cannot close this imperfect account of his labours without indulging the hope, that the period is now arrived, when, after a hapless exile of more than twenty years, he will be again restored to his country, that with the increase of means he will prosecute with renovated vigor the work he has just commenced, and at some distant time will again be able to exclaim, "Heureux qu'il étoit possible de l'être, dans mon intérieur; ayant des amis, et ne connoissant, pour ainsi dire, d'autre société que la leur, habitant un royaume heureux et florissant, gouverné par le meilleur, le plus doux, et le plus vertueux des rois, quelle situation pouvoit être plus heureuse pour l'étude des sciences, pour laquelle le calme de l'âme, la tranquillité et la sécurité forment le premier des biens, et le plus absolu des besoins."

Lectures on Inflammation, exhibiting a View of the general Doctrines, pathological and practical, of Medical Surgery.
By John Thompson, M. D. F. R. S. E. Professor of Surgery to the Royal College of Surgeons, and Regius Professor of Military Surgery in the University of Edinburgh. One volume 8vo pp. 649. London 1813.

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[From the London New Medical and Physical Journal, May 1814.]

MOST joyfully do we turn from the ungrateful task of exposing ignorance and knavery, to the more congenial occupation of pointing out to public attention, the productions of genuine merit and erudite research. The work before us appears to be the offspring of sterling sense and extensive information. It embraces a subject, of all others, perhaps, the most interesting to the general practitioner; when we reflect, that INFLAMMA-

TION is not only one of the most distinct in its forms and important in its consequences, but also by far the most frequent in its occurrence, of the various morbid affections to which the human body is liable. There is no external injury unaccompanied by inflammation, in a greater or less degree; and few, if any, local or even general diseases, in which it is not, in some measure, to be regarded as a concomitant cause, symptom, or consequence.

We shall, therefore, endeavour to present our readers with a condensed, but pretty full analysis of this interesting volume; conscious that our pages cannot be filled with more important matter, and that we cannot better express our admiration of the work, than by giving a more than usual space to the exhibition of its prominent features.

In the Introduction, Dr. Thomson has touched in a sensible and moderate manner, on the long discussed question respecting the propriety of dividing the healing art into medical and surgical departments. He forcibly urges the difficulty, if not the impossibility of drawing the line of distinction without manifest incongruity, in any situation; while in small towns, country villages, the army, and the navy, a subdivision of labour in the medical profession is totally inadmissible. He does not deny, however, the good effects of this subdivision in improving individual skill in the medical, as well as other professions, wherever the state of society will admit of it:

“But the sum of what he wishes to contend for is, that those who are destined for the exercise of the medical profession, by whatever name denominated, should all receive the same elementary education. This, it appears to him, is the only rational reform that the present state of medical education admits of, the only barrier that ever can be raised between the medical profession and the practice of dangerous quacks or ignorant pretenders.” p. 8.

The history which follows of the rise and progress of this separation into physician and surgeon is amusing, but we shall proceed to the immediate subject of the work.

On the four characteristic local symptoms of inflammation, viz. redness, pain, heat, and swelling, Dr. Thomson has made many interesting remarks. He considers the *redness* to depend, in the incipient stages, on the “influx of an unusual quantity of

blood into the vessels of the part," which either distends the minute sanguiferous, or forces its way into the seriferous vessels. The *pain*, he considers, as depending partly on the over distention of the vessels and fibres, and partly on the pressure which the nerves of the part must sustain. The *heat*, he asserts, never exceeds the temperature of the blood at the heart. Thus, if inflammation be excited on the surface of the chest by a blister, the heat of the inflamed part will seldom exceed that of the surrounding parts more than one or two degrees; while on a remote part of the upper or lower extremities, the increase of temperature would be five or six degrees. This, says he, "has given rise to the idea that an excessive heat always accompanies the state of inflammation." p. 46.

"The *swelling* and tension seem to depend partly on the inflamed vessels being unusually distended with blood, and partly, perhaps chiefly, on the effusion of serum and other fluids into the surrounding cellular membrane." *ib.*

Our author remarks here a peculiar kind of swelling in some inflammations, where the parts feel as hard as bone. We have at this moment a patient, whose leg from the inner ankle up nearly to the knee, is as hard as a board, with very slight inflammation and pain. He has had it nearly three weeks, and attributes it to a blow which he received long ago across the loins. Dr. T. adds, that in all cases of this kind, which he has seen, the affection spontaneously disappeared in a few weeks.

The various remote and exciting *causes* of inflammation are minutely and distinctly traced from p. 50 to p. 60, after which he discusses the *proximate* cause, or state of the blood vessels in inflammation.

Before entering on an examination of the two hypotheses which at present divide the medical world, respecting the state of the capillary vessels affected with inflammation, Dr. T. enumerates some of the principal *facts* connected therewith, which, as the result of general experience, are universally acknowledged. These are as follow: 1st. That inflammation has its principal seat in the capillary system of vessels. 2d. That the diameters of these vessels are enlarged.—4th. That the application of the exciting causes do not, in general, occasion dilatation of the large arterial trunks.—5th. That the pulsation of arteries is not an inherent power in themselves, but depends entirely on

the systole of the heart.—7th. That the pulsations of an artery leading to an inflamed part are rendered stronger and more perceptible than in those leading to sound parts.—10th. That local inflammation is generally soon followed by an increased action of the heart and larger arteries, &c. p. 64.

The first hypothesis, with Stahl at its head, and which has been adopted by the greater number of succeeding pathologists, particularly Dr. Cullen, is founded on the supposition that “the inflamed vessels are in a state of *increased* action.” The second was started by Vacca in 1765, and afterwards by Lubbock and Allen, at Edinburgh. According to it, “the capillaries act with *less* force than the trunks from which they are derived.” We will not follow the author through the various arguments which he adduces from the supporters of these hypotheses, nor his own experiments, which, however, may be perused with interest. We ourselves have long inclined to the second of these hypothesis, and it is adopted by Dr. Wilson and Dr. Parr. Dr. Thompson, however, after summing up the evidence on both sides, comes to this conclusion :

“That inflammation is sometimes attended by an increased, and at others, by a diminished velocity in the circulation through the capillary vessels of the inflamed part, and consequently that neither of these two states ought to be included in the definition which we give of inflammation.”—p. 89.

Under the head of “constitutional or febrile symptoms,” Dr. T. introduces a very long extract from Whytt’s Works, on the general and particular sympathies observable in the complicated human system, which we recommend to the serious study of every medical tyro, and as by no means unworthy of perusal by the initiated.

Among the most remarkable of the constitutional effects of local inflammation, the following are enumerated by our author : 1st. The changes induced in the general or local action of the sanguiferous system, observable in the state of the pulse, temperature, respiration, dryness or humidity of the skin, hæmorrhages, and in the secretions. 2d. As affecting the digestive organs. 3d. As affecting the nervous system, as by syncope, shivering, coldness of the extremities, watchfulness, delirium, &c. &c. 4th. As affecting the organs of voluntary motion, as in subsultus tendinum, spasms, &c.

"It is in the knowledge and treatment of these, says our author, and similar morbid phenomena, that the boundaries which divide surgery from physic meet, and are lost in each other; for whatever distinctions convenience or custom may have introduced among the practitioners of the healing art, there is no foundation for these distinctions, either in the nature of the disease, or in the knowledge which every medical practitioner should possess of the appearances which different diseases exhibit, and of the means by which they are to be removed."—
p. 102.

Dr. Thompson makes many judicious observations on what is termed "symptomatic fever," and the difficulty of distinguishing it from what is called "idiopathic;" yet he appears by no means inclined to run into the modern extreme of considering *all fevers* as depending on local inflammation of some organ or other.*

"In proof, says he, of the close and intimate relation subsisting between the state of fever and that of local inflammation, I may also remark, that as local inflammation gives rise to constitutional febrile symptoms, so idiopathic fevers of all kinds, in their turn, often give rise to, or at least are accompanied by, local inflammatory affections. Indeed, local inflammation may take place in all periods of idiopathic fevers; and in innumerable instances, seems to be the more immediate cause of the dangerous or fatal effects which so frequently occur. In all febrile affections also, whether of an idiopathic or symptomatic kind, determination to particular regions or organs are liable to occur."
p. 104.

This is a sensible doctrine, and ought to induce our Brunonian brethren to pause before they commence their operations of "throwing in" bark and wine, in fevers, and thus adding or increasing topical congestion, instead of guarding against such an event. It is pleasant to see from the original cradle of Brunonianism, such observations as the following spring forth.

"That there are only two forms of disease, sthenic and asthenic; two kinds of remedies, stimulant and debilitating; that the indication of cure of the sthenic diathesis is to diminish, that of the asthenic to increase excitement, and that we must

* Vide Dr. Clutterbuck's Essay, and our Review of Mills on Fever, No. 39.

go on doing so till that degree of excitement, which is a medium betwixt the extremes, and suitable to health, be restored, may appear to the young and inexperienced to be a doctrine as useful in its tendency, as it is simple in its views. But opinions in practical medicine so very universal in their application, and so precise in their statement, though they may be convenient for the indolent and merely speculative student, cannot long be entertained by those who have talents or opportunities to observe diseases as they occur in Nature.”—p. 110.

Dr. T. is of opinion that “though the fever accompanying local inflammation be in many instances purely inflammatory, and in others purely typhoid, it is often of a mixed nature, like the fever denominated Synochus, by Dr. Cullen; inflammatory at its commencement, but becoming typhoid in its progress and termination.”—p. 111.

On each of the four classes of constitutional symptoms attendant on inflammation, Dr. T. makes a series of excellent remarks, which ought to be engraven on the young practitioner’s mind.

Under the head of “diminished perspiration,” he observes, that unfortunately for Dr. Cullen’s hypothesis, there were many fevers, “in which a *profuse perspiration* from the exhalents on the surface of the body, formed one of the most troublesome symptoms with which the practitioner had to contend during the continuance of the disease.” p. 114. We have seen some instances of this kind, but the “profuse perspiration” was never of that mild and *general* kind which proves salutary. It always seemed an exudation, as it were, while the skin felt tense like parchment underneath. In fact, the subcutaneous vessels seemed torpid, notwithstanding a watery fluid was issuing freely through the pores. The circumstance, therefore, does not so completely contradict the venerable Cullen’s spasmodic theory, as Dr. Thompson imagines, although it is untenable on other grounds than those here stated. We think, therefore, that our author is less happy in his remarks on “diminished perspiration,” than he generally is on other occasions. “Non omnia possumus omnes.”

In accounting for the derangements of the digestive organs, during local inflammation, Dr. T. has omitted to notice the strong sympathy which exists between the skin and chylopoietic

organs ; and in his remarks on the *furred tongue*, so general in gastric derangements, he forgets that this symptom is not entirely "a secretion from the papillæ," but in some measure, an actual alteration in the papillæ themselves. It is utterly impossible to scrape it off, which would not be the case were it merely a secretion.

The frequent absence of inflammatory buff on the first drawn blood in inflammation, should ever be held in mind by the medical tyro. "By receiving the blood in three different cups," says Dr. T. "I have seen none or very little in the first cup, some in the second, and a large quantity in the third."—p. 119. This crust is the coagulable lymph of the blood, or fibrin.

On the *terminations* of inflammation, viz. resolution, effusion, adhesion, suppuration, ulceration, granulation, cicatrization, and mortification, many pertinent and useful remarks, but more particularly novel, are made. He rejects the termination, *schirrus*, as appertaining to a specific disease, cancer, and inapplicable to common inflammation.

Scrophulous inflammation occupies a large share of Dr. T's attention, and very deservedly, not only from the obstinate nature of the disease, but on account of the variety of aspect which the scrophulous *diathesis* assumes. Dr. T. is of opinion, that next to hereditary descent, there is no predisposing cause of scrophula so powerful as the influence of climate.

"We see scrophula prevailing almost universally in certain districts, and cannot help believing that its production is somehow connected with the local peculiarities of the places in which it prevails, or appears to be endemial. Scrophula is said to occur chiefly in moist situations, subject to frequent changes of temperature. It occurs, however, in the highlands of Scotland fully as much as it does in the low and moist countries of Holland and Germany." And again, "In the climates and districts in which it occurs, scrophula, I am convinced, is an endemial, as well as an hereditary disease ; and those who would effectually and permanently secure themselves and their posterity from its attacks, must migrate from the climates and districts in which it prevails."—p. 136.

While enumerating the various exciting causes, the following deserve attention, viz. : Feeding children with the spoon, instead of suckling them at the breast. The *impure air* of crowded

schools, hospitals, and manufactories ; too warm clothing in bed, and too little when exposed to the air ; but above all, exposure to moist air and atmospherical vicissitudes.

The modification of inflammation, from variety of structure in the human body, has not been sufficiently attended to, and the observations of our author on this head will be read with interest.

“ The constitutional symptoms,” says he, “ which accompany inflammation of arteries, have never, as far as I know, been accurately observed or described ; but this is by no means the case with regard to the symptomatic fever which is so often excited by the inflammation of veins and absorbents. But though often observed, I doubt whether its real character and treatment have been at all times properly understood ; for in the histories recorded of these fevers, their progress seems to have often accelerated, if a fatal termination has not actually been induced, by the local and general use of heating and stimulating medicines.”—p. 154.

In the months of January and February last, when the cold was intense, and inflammatory complaints very prevalent, we ourselves were astonished that two out of three arms, on an average, inflamed after bleeding. We at first attributed the phenomenon to the lancets, but we found that the same occurred to our brother practitioners in the neighbourhood, and that some of our troops, [this happened on the continent,] nearly perished in consequence.

Dr. T. thinks that the lymphatic glands of the neck are more liable to scrophulous inflammation than others, from their exposure to aerial transitions ; but that it is in general *symptomatic*, from irritation in parts not glandular, as in transitory injuries and affections of the hairy scalp, ears, eyes, nose, and most particularly from slight and transitory affections of the teeth, gums, and other parts situated within the cavity of the mouth. The decay of the first teeth is often connected with the occurrence of glandular scrophulous swellings in the neck.—p. 157.

“ There are few scrophulous diseases, says Dr. T. more certainly fatal than phthisis pulmonalis, in this country. I will not say that every person who dies of *purulent abscesses* in the lungs is affected with scrophula ; but I can have no doubt, that at least nineteen out of twenty of these abscesses occur in persons of scrophulous dispositions.”—p. 162.

We do not entirely coincide with this supposition. In pulmonary inflammation, if the proper means are not early used, "purulent abscesses in the lungs" will occur to all constitutions, and they are more likely to happen to the florid, healthy, robust soldier or sailor, than to the pale sedentary scrophulous artisan in crowded cities. This is a phenomenon but too often presented to our eyes.

In the treatment of inflammation, if Dr. Thomson does not offer us much novelty, he more than compensates for this, by a judicious exhibition of those remedial measures which the experience of ages has fixed on the surest basis. This is all that can be expected in an elementary work, and in fact, ought to be the aim of every author, on similar occasions. He divides the means of cure, generally, into those which act upon the inflamed parts more or less directly, termed local or topical means, and those which produce their beneficial effects by acting upon the general system, termed constitutional means of cure. Inflammatory diseases are also divided into two classes, namely, those attended with a phlogistic, and those with an asthenic character. It is needless to say, that in the first class the most prominent remedial mean is blood-letting.

"In many inflammations, particularly those of the parts contained in the three great cavities of the head, chest, and belly, general blood-letting, if not the only, is the principal remedy to which we can trust for cure. The quantity of blood which it is necessary to take away, varies according to the violence of the inflammation, the temperament, strength, and habits of the patient; from twelve to twenty ounces, or even more, ought generally to be drawn every time we have occasion to use the lancet; and bleeding to this extent may be repeated two or three times in the course of the first twenty-four hours."—p. 166.

Upon this passage we mean to offer some remarks. In private practice, among the upper classes of society, and particularly in large cities, or crowded manufacturing towns, the above plan will in general subdue the disease. But where the peasant, the soldier, or the sailor, is affected with thoracic or cerebral inflammation, we believe, and we do not speak from theory, that a large quantity of blood abstracted suddenly and at once, will have infinitely more effect than the same quantity drawn in the manner above mentioned, at different, or repeated times. We

have long been convinced, that where an important organ, as the lungs or brain, is in a state of inflammation, we can hardly go too far, at the beginning, in the way of venæsection. Often have we seen the abstraction of forty ounces of blood from a large orifice, [even in a slender patient] produce *deliquium animi*, and arrest the disease *in limine*, when the smaller bleedings would have led to much greater effusion of blood in the end, protracted the sufferings of the patient, and perhaps endangered his life. We believe that new facts will shortly come before the public in corroboration of these observations, and we can refer to several of our late Numbers for ample testimony in favour of bolder and more decisive measures in febrile diseases, than the *asthenical* phantoms of a tottering theory have yet permitted the generality of practitioners to adopt. We shall conclude this part of our Review by a quotation from our author, with which we were much pleased.

“This is, therefore, but too much reason to suspect, that the term debility, by which of late years every morbid symptom has been supposed to be explained, is a mere “*asylum ignorantie*,” into which the pathologist resorts, in order to conceal the defects and the paucity of his knowledge.”—p. 139.

PUERPERAL FEVER.

[We insert from the (London) New Medical and Physical Journal for May 1814, the following observations on a paper originally published in the New-England Journal, but since extracted into the London Journal. The French work alluded to could not have reached the author of that piece.]

[To the Editors of the New Medical and Physical Journal.]

GENTLEMAN,

DR. CHANNING, in his Observations on the Puerperal Fever, which appeared in your last Number, p. 322, remarks, that except Mr. White of Manchester, scarcely an author has given cases in which diarrhœa has been a leading and very pressing symptom.

I beg leave to inform him, that a work has lately been imported from France, entitled "*Des Maladies aiguës des Femmes en Couche ; par R. G. Gastellier, M. D.*" in which is given a "*Precis historique d'une Maladie épidémique qui a attaqué les Femmes en couche de l'Hospice de la Maternité, en Septembre et Octobre, 1811 ;*" and it appears that one of the invariable symptoms of this epidemic, was a constant and obstinate diarrhœa, "*diarrhée constante et des plus tenaces.*"

There were likewise present great tension and tenderness of the abdomen, and the "alvine dejections were abundant, involuntary, serous, and putrid." In proportion to the severity of these symptoms was the danger of the disease, so that, in this instance at least, the spontaneous diarrhœa was not, as has sometimes been supposed, a favourable occurrence.

Of 172 women, delivered in the month of September, seventy-one were attacked with the epidemic, and sixteen died. Of 180, delivered in the month of October, seventy-seven took the disease, and twenty died ; and when Dr. Gastellier quitted the attendance on the Hospital at the end of October, three or four more were at the point of death, "*a toutes extremities.*"

The whole of these thirty-six women were opened after death. On making an incision through the peritonæum, a great quantity of gas escaped ; the cavity of the abdomen contained a yellowish limpid fluid, in which floated small pieces of an albuminous concrete substance ; this fluid being removed, a thick layer of the same albuminous substance was found completely covering the viscera ; and beneath this was a membranous expansion, "*une fausse membrane,*" which connected the viscera and intestines together into so firm a mass, that it was difficult to separate them.

M. Gastellier thinks, with most practitioners on the continent, that puerperal fever is occasioned by an aberration of the milk, and a suppression of the lochia.

I remain, &c.

April 9, 1814.

M. O.

Official Papers relating to Operations performed by order of the Directors of the Royal Hospital for Seamen at Greenwich, on several of the Pensioners belonging thereto, for the purpose of ascertaining the general Efficacy of the New Modes of Treatment practised by MR. ADAMS, for the Cure of the various species of Cataract, and the Egyptian ophthalmia. Published by order of the Directors.

[From the London Medical and Physical Journal.]

As much speculation has been excited by Mr. Adams's operations for cataract in Greenwich Hospital, and his treatment of the Egyptian ophthalmia, we have great pleasure in transcribing the following extracts from the official papers just published.

"In the autumn of 1813, the directors of Greenwich Hospital were informed that great improvements had been recently made by Mr. Adams, late oculist to the West of England Eye Infirmary at Exeter, in the modes of operating on the different kinds of cataract; and as the practice of extraction heretofore performed on the pensioners had not been attended with the desired success, he was requested to examine the blind pensioners, and accordingly reported that, 'with the surgeon of the Hospital, he had selected twenty cases for operation, consisting of cataracts, closed pupils, and the Egyptian ophthalmia; and as on the two former diseases he had recently published some important discoveries, and also successfully adopted a novel mode of practice in the worst stages of ophthalmia, he entertained a confident expectation that the superior efficacy of his operations over those usually practised would enable him, in some of the most formidable diseases of the eye, to afford relief to many of the pensioners, whose cases had been considered incurable; but he utterly disclaimed all expectation of remuneration of his professional services on this occasion.'

"The pensioners being desirous to be placed under the care of Mr. Adams, the medical officers of the Hospital were directed to attend the operations, to afford every assistance, and to report to the directors the progress and result. A house was

accordingly taken in Air-street, Piccadilly, for the accommodation of the pensioners, and the convenience of the oculist; but being found, in many respects, unsuitable, another was afterwards hired in Lisle-street, Leicester-square, every way adapted to the comfort of the patients.

"It appearing, by the reports of the medical officers of the Hospital, that the operations performed on the blind pensioners by Mr. Adams, had been attended with great success, the directors were desirous of viewing the men, and for that purpose convened a special meeting, at which the pensioners, as well those who had been under the care of former oculists, as the patients of Mr. Adams, were examined and individually interrogated; and as the effect of the operations performed by the latter, as stated in the reports of the physician, surgeon, and apothecary, was found to be accurately detailed, the directors have considered it to be their duty to give publicity to the official reports and proceedings on a subject so interesting to humanity.

"OFFICIAL PAPERS, &c.

("COPY.")

"May 25th, 1813.

"SIR,

Conceiving that it will be gratifying to the governor and directors of the Royal Hospital to hear that the new practice for the cure of cataract, and the formation of artificial pupil, proceeds most favourably on the pensioners placed under the care of Mr. Adams, I have great pleasure in acquainting you, for their information, that the first set of patients sent to London, requiring thirteen eyes to be operated on, are all cured, with the exception of one man, David Hoar, a person of notoriously perverse character, who was attacked with fever, and sent back to the Hospital for the cure thereof; but even in this case there is every prospect of success, from a repetition of the operation. Eleven other patients who were sent to replace those already cured, have all been operated on, and with the prospect of complete success, (excepting two that had been previously couched by another oculist,) five being already capable of seeing, and the others proceeding as favourably as could be expected.

"The superior success of Mr. Adams's new modes of practice when compared with the operation performed on the pensioners for the last fifteen years, is very striking. On examining

the latter it appears, that out of *twenty-four eyes*, operated upon, several had been destroyed ; in other instances the pupils had become obliterated, and *one only* had been benefited, and even in that the success is incomplete.

"Among the men already cured, some of the cases are so remarkable as to merit particular notice.

"Edward Turner had, during six months that he was a patient of the London Eye Infirmary, undergone *thirteen* operations ; nevertheless, he obtained but very little benefit in one eye, and none in the other ; Mr. Adams has cured both by *one operation on each*.

"Hartgill had been blind for near twenty years, and was considered by every oculist of eminence in London to labour under gutta serena. Mr. Adams has successfully operated on him, and he is now capable of reading the *smallest print*.

"Bray, aged seventy-nine years, is cured of cataract in both eyes, and was capable, in the space of a fortnight, of seeing the *minutest objects*.

"Douglas, aged thirty-two, with closed pupils, after having been above five years a patient of the oculist before referred to, without experiencing the least benefit, has had an artificial pupil formed, by which he is enabled to see the most minute objects with distinctness ; his other eye has been since operated on, and promises to be equally successful."

JOHN DYER, Esq. *Surgeon*.

B. M'LAUGHLIN, *Secretary*.

Royal Infirmary, Dec. 27, 1813.

"Sir,—We enclose herewith, for the information of the directors, separate reports of the results of the *new* and *old* operations for the cure of cataract which have been practised upon the pensioners of the Royal Hospital, the great disparity in which cannot fail to make a strong impression on the minds of the board.

"In order to bring them equally acquainted with the extent of the failures in extracting the cataract, as formerly practised as well as with the great success of Mr. Adams' improved modes of curing that disease, we have given a detailed description of the result of each, with the present state of the eyes which have been submitted to the trial of the two systems.

“ The proportion of eyes totally destroyed by the operation of extraction amounts to one-half the number operated upon ; to this the success of Mr. Adams, more particularly in the cases which had been considered incurable, as well as those previously operated upon without benefit, forms a very striking contrast, as it will be seen that his operations have failed but in one instance.

“ To enable the board fully to appreciate this success, we think it proper to point out, that even in the men whose vision is not at all, or but partially, benefited (with the exception of Ford,) the operations were as perfectly executed as on those whose sight is completely restored. To the disease of the optic nerve, therefore, and not to the failure of the operation (as was the case where extraction had been formerly performed,) is to be attributed the want of that perfectly successful issue which is so conspicuously displayed in the ‘ *unexceptionable cases.*’

“ This diseased state of the optic nerve in those patients was originally apprehended by Mr. Adams ; and when, at their urgent solicitations, he was prevailed upon to perform the necessary operations, he stipulated, that, should the event confirm his unfavourable opinions, we should attest the circumstances under which they were undertaken.

“ It is however, very important to have ascertained, by actual experiment, as Mr. Adams has done on several of the pensioners, that the optic nerve, although so much diseased as to have deterred a former practitioner from operating, yet, by the removal of the cataracts, and subjecting the eyes to a particular plan of discipline, their functions have been sufficiently recovered to afford useful, and sometimes almost perfect, vision. An instance of the latter is shewn in the case of Hartgill, blind for nearly twenty years, as supposed, by all the highest authorities in London, from gutta serena, for which disease he had been treated. Bray’s and Wilkins’s perfect restoration to sight are little less extraordinary, from the great age of the former, and the latter having had an artificial pupil formed after a complete obliteration of that aperture, by an unsuccessful operation of extracting the cataract, performed seven years since.

“ These, together with the other case included in the two last divisions of the No. 2, prove that a very large proportion of persons unhappily afflicted with blindness, and hitherto considered

incurable, are now susceptible of relief from the new and improved operations, and the after-management of the eyes, practised by Mr. Adams.

“ In addition to the gratifying contents of the second Report, we think it our duty to state, for the information of the board, that Mr. Adams has discovered a mode of curing the Egyptian Ophthalmia, which has been successfully practised upon several of the pensioners, some of whom had been blind for three or four years, and given up as incurable by the most eminent oculists then in London. The communication that this destructive and hitherto intractable disease admits of cure we conceive will be gladly received by the board, and the promulgation by Mr. Adams of this important discovery be considered as a great *national desideratum*.

“ By the adoption of his practice we are of opinion, from what we have seen of its effects, that a very large proportion of the seamen and soldiers, who have been discharged the service, blind of the Ophthalmia, might be again rendered fit for duty, or be made useful members of society.

“ We cannot conclude this letter without stating, in justice to Mr. Adams, that he has freely demonstrated his practice ; and that he has, in the most liberal and unreserved manner, given us every information that we required relating to the treatment of diseases of the eyes.

“ We are, Sir, your very humble servants,

“ R. ROBERTSON, *Physician*.

“ B. McLAUGHLIN, *Surgeon*.

“ M. S. KENT, *Apothecary*.

“ *John Dyer, Esq.*”

“RESULT of the OPERATION of EXTRACTION which had been performed on Pensioners blind of Cataract now in the Hospital, previous to the employment of Mr. ADAMS.

REPORT 1.

Eyes destroyed	12
Obliterated Pupils	4
Gutta Serena and secondary Cataract	3
Opaque Cornea, and other diseased changes of the Eye	4
Successful	1
Total number of Eyes upon which the operation of Extraction had been performed	24

RESULT of the NEW OPERATIONS performed on the Pensioners by Mr. ADAMS.

CASES considered unexceptionable

REPORT 2.	Age.	Description of Disease.		Result of the Operations.	State of Vision.
John Bray . . .	80	Cataract	2	Perfect	{ Perfect, being able to see as well as ever with Cataract Spectacles.
Richard Collins	63	Do.	2	Do.	{ Perfect, do. do.
Robert Kinsley	70	Do.	2	Do.	{ Sight returning, when he died from Carbuncle.
Robert Handcock	47	Do.	1	Do.	{ Perfect, and gone on out-Pension.
* Jonathan Stratton	75	Do.	1	Do.	{ Perfect.
Edward Hilback	40	Do.	1	Do.	{ Do.
Guy Overton . .	79	Cataract, with obliterated Pupil . .	1	{ Cataract cured, and an Artificial Pupil formed	{ Do.
Silas Darby . . .	66	Cataract	1	Perfect	{ Do.
William Russell .	50	{ Cataract complicated, with obliterated Pupil, and a defect of the Optic Nerve	1	{ Cataract cured, and an Artificial Pupil formed	{ Vision nearly, but not quite perfect, owing to the diseased state of the Optic Nerve.
William Roberts	48	Cataract	1	{ Cataract cured, partial opacity of the Cornea removing	{ Vision not perfect, but sufficient for the common purpose of life.
Thomas Ford . .	74	Do.	1	{ Unsuccessful, but no deformity produced	{ }

CASES considered incurable by former Oculists.

John Douglas . .	36	Cataracts with obliterated Pupils . . .	2	Cataracts cured, and Artificial Pupils formed - - - - -	Perfect
Frederick Hartgill	48	Cataracts complicated, with Gutta Serena - - - - -	2	Perfect - - - - -	{ Was enabled to read small print with great fluency, till attacked with violent inflammation of the eyes from cold. Is now convalescent. Vision useful, and can see small objects Vision useful and able to see objects at a considerable distance.
Thomas Daily . . .	46	Cataract and obliterated Pupil, with Gutta Serena - - - - -	1	Cataract cured and an Artificial Pupil formed - - - - -	
William Austin . .	31	Do. Do. - - - - -	1	Ditto - - - - -	Vision useful and improving, when he tried of a consumption. Vision useful continues to improve Vision very good, but not perfect.
David Hall	52	Cataract and obliterated Pupil - - - -	1	Convalescent when discharged from the Infirmary for incorrigible drunkenness - - - - -	
William Thomson	49	Do. Do. - - - - -	1	Cataract cured, but Pupil requires further enlargement - - - - -	Vision very good, but not perfect.
† Otter Grindall . .	40	Cataract and Gutta Serena - - - - -	1	Perfect - - - - -	
Thomas Whiteman	28	Cataracts (adherent) with a defect of the Optic Nerve - - - - -	2	Do. - - - - -	

CASES which had been operated upon unsuccessfully by former Oculists

Edward Turner . .	46	One cataract adherent, the other detached & floating, had previously undergone <i>thirteen</i> operations	2	Perfect - - - - -	Perfect.
John Broadway . .	51	Cataracts membranous (or secondary,) and Gutta Serena - - - -	2	Do - - - - -	Not improved, Optic Nerve being totally insensible.
John Maddin . . .	52	Do. do. with obliterated Pupil	1	Membranous Cataract removed, and an artificial Pupil formed	Do.
John Wilkins . . .	52	Cataract secondary, with obliterated Pupil, from the failure of Extraction seven years since - - -	1	The secondary Cataract removed, and an Artificial Pupil formed	Perfect, being able to see the minutest objects.
		Total number of eyes upon which the new operations have been performed	31	Successful - - - - -	- 29
				Unsuccessful - - - - -	1
				Discharged for irregularity	1
				RECAPITULATION.	
				Total -	31

* Jonathan Stratton was attacked, three months after he was cured, with repeated violent inflammations of the Eye, which assumed an intermittent form, and has nearly destroyed the Vision.

† Otter Grindall is since dead of Apoplexy.

R. ROBERTSON, *Phys.*

B. M'LAUGHLIN, *Surg.*

M. S. KENT, *Apoth.*

“ 26, *Albemarle-street*, Jan. 9, 1814.

“ MY LORDS AND GENTLEMEN,—The favorable termination of the trial which you directed to be made, in order to ascertain the comparative success of my new modes of operating for the cure of cataract, with that of the operation of extraction, as it is generally performed, will, I hope, be thought to justify my addressing you on the circumstances of it.

“ Although fully aware of the dangers attending the operation of extraction, as usually performed, and apprized, as I was, that the pensioner could no longer be prevailed upon to submit to that mode of operating, from its ill success for the last fifteen or twenty years, I did not conceive, till I perused the reports of the surgeon of the hospital, that the proportion of failures was so great.

“ From the statements which have been made of the success of the practice of extraction, the public have been taught to believe that it possessed all the excellence of which any operation for the cure of cataract was susceptible. It became, therefore, highly necessary that such an experiment as the present should be instituted; and that, under the immediate superintendence of *impartial and disinterested* persons, whose testimony could not be doubted.

“ It is then with no common satisfaction that I now request your attention to the comparative results of the different operations (the *new* and *old*,) as specified in the official reports of the physician, surgeon, and apothecary, to your institution; which, with the personal examination you intend this day to make of the two sets of patients, must necessarily establish, beyond all doubt, the decided superiority of my mode of operating, over that which had been previously practised on the pensioners.

“ And here I beg leave to repeat the observation I made at my first interview with your honourable board, that it is the *operation*, and not the *operator*, which I deprecate. Were he to adopt my operations, or were I to follow his, the results of the two modes of practice would probably be nearly the same as they are found to be; nor shall I hesitate to add my firm belief, that superior manual dexterity is not to be found in this kingdom, than is possessed by the operator whose efforts have proved so unavailing, in the many instances submitted to your consid-

eration. It is, I conceive, the want of a personal experience of the superior efficacy of my practice, which prevents his adopting it with the same promptitude, as another oculist of long-established celebrity has done, since he saw me operate; who, before that period, was distinguished by his practice, as well as writings, as one of the warmest advocates of the operation of extraction.

“It may be proper to inform your honourable board that I have not confined myself to any individual operation in the treatment of the pensioners blind of cataract intrusted to my care. My instruments and modes of operating have varied as the nature of the case required. Where the consistence of the cataract has admitted of an immediate and complete division, I have placed the separate portions in a situation which ensured their absorption in five or six weeks. In these cases, the general success of the operation exceeds all credibility with those who have been in the habit of witnessing the results of other modes of practice. Of upwards of *eighty persons* born blind of cataracts, upon whom I have performed this operation, I have not lost an eye. In three instances alone, in which I was prevented from repeating the operation, it did not produce the anticipated benefit; and I should consider myself unfortunate were I at any time to be less successful in an equal number of persons who became blind from cataracts after birth, provided they admitted of being treated in the manner already described, and the health of the patients was in a state favourable for the operation. Hence arises a very important question: To what period of life does this particular practice apply? To which I have a ready answer: That I have *never failed* in being enabled to effect this necessary division in persons under *forty years* of age; very rarely in those between *forty* and *fifty*, and have frequently succeeded in persons in the most advanced periods of life.

“Where the cataract is too hard and solid to admit of this immediate division, I do not attempt, as was my former practice, to effect its absorption by a frequent repetition of the operation; but I at once extract it. This, however, is accomplished by a process *totally different* from that I have felt it a duty to deprecate; a process which I must claim to be novel, and which happily attains the highly important desiderata which had been hitherto considered *unattainable*, while it obviates the many cau-

ses of failure which rendered the usual mode of extraction so generally unsuccessful. From the principle upon which it is founded, and the favourable results of its termination during the last two years that I have extensively practised it, I feel myself warranted in asserting that it possesses the utmost degree of excellence which it is *possible* for extraction to arrive at, and that its general success will prove nearly as great as the operation for the removal of the soft cataract. To deter other persons from claiming it as their invention, or anticipating me in its communication to the public (as was the case with my instruments and operation for the cure of the *soft cataract*, and my successful revival of an obsolete operation for *artificial pupil*), I have requested Mr. McLaughlin to record on the hospital books, the different stages of this operation, as he has seen me perform it on several of the pensioners.

“In many cases an artificial pupil has been made, as well as the cure effected of the cataract, with which the disease of obliterated pupil was complicated. Again, where the pupil, though not obliterated, was much contracted from adherent cataract, a different operation was practised. In other instances I have removed secondary or membranous cataracts, which had come on after the usual mode of extraction had been to all appearance perfectly accomplished.

“I have also, in my treatment of the pensioners, ascertained a fact of very great practical importance, which will in a great degree explain the general bad success of the operation of extraction, as it is usually performed; namely, that the vitreous humour was in a state of dissolution nearly in one half of the eyes on which I operated. This is a diseased change which can rarely be perceived before the performance of the operation, and which authors agree must occasion a total destruction of the eye, whensoever the cataract is extracted in the usual manner. In these cases I performed an operation of a different kind from any of the former.

“The happy result which has attended such a combination of practice, by which peculiar and appropriate instruments and modes of operation have been adapted to each variety of the disease, proves that those who pursue one beaten track, in all cases, must necessarily fail in a very large proportion of them;

and still further accounts for the bad success formerly attending the operation of extraction on the pensioners.

“ I trust that it will not be considered as irrelevant to the subject of the present communication to inform you, that there are different modes of effecting the cure of cataract by the *absorbent practice*. My friend and preceptor, the late Mr. Saunders, pursued a system different from that which I have so warmly supported in this letter. The operation which he preferred had been performed *thirteen times* during six months on one of the pensioners, (Edward Turner,) without a removal of the disease. On one of my private patients the same operation had been performed *seventeen times* prior to my having been consulted, *ten times* on one eye, and *seven* on the other, in the course of as many months, and with no better success. In both instances I perfected the cure by a single operation on each eye; so that, if these patients had originally been treated according to my mode of practice, *one*, or, at most, two operations, would have effected the complete removal of the cataracts in the space of five or six weeks. This difference in the two modes of operating, it is of great importance to myself distinctly to specify, otherwise, from its being generally known that I was the sole confidential pupil and assistant of the late Mr. Saunders in his operations for cataract, among those who are now pursuing the profession of an oculist, it might be considered by many, who have not seen my work on Diseases of the Eye, that I still, as in the commencement of my practice, follow his modes of operation, whereas I have long since found it necessary wholly to abandon them.

“ I must now, my lords and gentlemen, beg leave to apologize for occupying so much of your time and attention; but I trust that you will attribute the length of my present communication to an anxious desire to give you some explanation of the nature of those operations, by which I have been enabled so successfully to fulfil your wishes in the treatment of the pensioners.

“ While I offer my most grateful acknowledgments for the politeness and condescension with which, collectively and individually, you have been pleased to receive my communications, and to acquiesce in those arrangements which I presumed to recommend for the better trial of the important experiment

just decided, permit me also to express my warmest obligations to the medical officers of your institution, for their liberal and zealous co-operation. In an especial manner it becomes me to mention the humane and able assistance afforded by Mr. M'Laughlin, to which may be attributed much of the successful issue of my experiments.

"I have the honour to remain,

with the highest respect,

my lords and gentlemen,

your most obedient, humble servant,

WILLIAM ADAMS."

*To the Hon. the Directors of }
Greenwich Hospital.*

INTELLIGENCE.

IODE OR IODINE.

[It appears by the late Journals, that a new substance has been lately discovered, which, when exposed to heat, rises in the form of a violet coloured vapour and condenses in black shining crystals. The following is all the information we have been able to obtain respecting its properties and the mode of its formation.]-ED.

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Process for obtaining Iode.

BY MR. ALEXANDER GARDEN.

Old Compton-Street, Soho, March 21, 1814.

SIRS,

THE following method, which I have lately employed for procuring iode, I take the liberty of communicating for insertion in the Philosophical Magazine, should you deem it of sufficient importance, and which, in addition to the information already therein contained on the same subject may not be altogether unacceptable to some of your chemical readers. It is as follows:

1. To a concentrated watery solution of kelp, (or the waste lee of the soap-maker where kelp has been employed,) from which the greater part of the crystallizable salts have been separated by the usual processes of evaporation and crystallization, add red oxide of lead in the proportion of one ounce to about a pint of the former; boil the mixture over a slow fire to dryness, and increase the heat towards the end of the solution, so as to carbonize any animal or vegetable matter which the substance may contain. This last may most conveniently be performed in an iron ladle.

2. Digest the dried mass in a quantity of cold water sufficient to extract the greatest portion of the soluble matter, filter, and evaporate the clear liquid to the consistence of a syrup.

3. Introduce the liquid obtained in the last process, together with the saline matter which may have separated during the

evaporation, into a glass matrass, and pour thereon about twice its bulk of alcohol; digest with a gentle heat for a few minutes and then suffer the vessel with its contents to grow cold.

4. Decant the clear alcoholic solution into a tubulated retort, adapt a receiver, and by means of a gentle and gradually applied heat distil off the alcohol. The saline matter which remains in the retort is to be washed out and evaporated to dryness in a capsule of Wedgwood's ware.

5. Introduce the dry salt thus obtained into a matrass with a short neck, to which a glass tube about six or eight inches long, and sufficiently large to fit over the external diameter of the neck, has been luted, and pour over the salt by means of a long-necked funnel twice its weight of strong sulphuric acid. Heat the mixture gradually by a spirit or Argand's lamp, and the iode will immediately begin to rise in the form of a dense and beautiful violet-coloured gas, which will be condensed in the upper part of the vessel in black shining crystals; when the gas ceases to be disengaged the matrass should be allowed to cool: the iode may then be washed out with water, dried on white filtering paper at a temperature not exceeding 100° of Fahrenheit, and inclosed in a bottle accurately fitted with a glass stopper.

The chief advantage of the preceding processes is to separate pretty completely all the foreign salts contained in the kelp, and to obtain, in a nearly insulated state, the saline compound, from which alone iode is to be obtained.

The mass remaining in the matrass from which the iode has been separated, consists of sulphate of potash with a small proportion of sulphate of soda; hence it would appear probable that in kelp an iode may exist in combination with potash or soda, or both, as iodine of potash or of soda. When iode is added to a solution of subcarbonate of potash a combination takes place, and the mixture assumes a dark brown colour. If a gentle heat be applied, this colour disappears and the solution remains of a pale straw-yellow colour, a boiling heat does not separate iode from this combination, but if the solution be evaporated to dryness, the addition of sulphuric acid to the dry mass separates iode under its characteristic form.

I am, sirs, yours, &c.

ALEXANDER GARDEN.

To Messrs. Nicholson and Tilloch.

[*Correction of a typographical Error which occurs in the Statement of Mr. Accum's Process of preparing Iode, published in the last Number of the Philosophical Magazine ;¹ with additional Remarks on the Method of obtaining Iode.—Communicated by Mr. Accum, Operative Chemist, &c.*

Compton-Street, Soho, March 1814.

SIRS,

I WILL thank you to notice in the Philosophical Magazine for next month the following typographical mistake, which occurs in some copies of that work, published last month; namely, for the words *oxide of lime*, page 146, line 6, read *oxide of lead*.

Having been applied to from different quarters concerning this mistake, you will perhaps do me the favour to reprint by way of answering my correspondents, the paragraph again in which the error occurs. This paragraph should read thus:

“ ANOTHER PROCESS OF OBTAINING IODE.

“ Iode is to be found in abundance in the waste or spent lee of those soap manufacturers who employ kelp in the preparation of soap. To obtain the iode from the waste lee, let it be boiled for a few minutes with quicklime; strain the fluid and mingle it with sulphuric acid in excess.* This being done, evaporate the liquor to a syrup consistence, and then distil, or heat it, in a flask, or retort with red oxide of lead and sulphuric acid. The iode will thus be obtained in abundance; and this, in fact, constitutes the cheapest process of obtaining it.”

If the product to be distilled with manganese has not been freed sufficiently from the muriates in which the soap lee abounds, there then is a copious production of chlorine, together with a yellow fluid, and then the quantity of iode becomes considerably diminished. This loss may be guarded against, by adding filings of zinc to the mixture, previously to submitting it to distillation. In fact, the addition of zinc filings effects the expulsion of an additional portion of iode from the mass, after the oxide of lead or manganese has ceased to act.

* The boiling of the lee with quicklime is not essential, but it is necessary that the sulphuric acid should be added greatly in excess.

For the knowledge of this fact, I am indebted to the chemical professor of the Royal Institution.

It is obvious that instead of waste lee, the so called black ash, dissolved in water, may be successfully employed.

I remain yours, &c.

FREDERICK ACCUM.

Messrs. Nicholson and Tilloch.

On preparing Iodine.

BY MR. JAMES FISHER.

Walbrook, March 1814.

SIRS,

Mr. Accum having given to the public, through the medium of your Magazine, some processes for preparing iodine, I have repeated them with success; and I beg, through the same channel, to point out another method of preparing iodine not mentioned by that chemist, but which has been found to answer well. The operation consists in concentrating the waste lees of the soap manufacturer, by boiling, and then mixing it with spirit of wine or alcohol; the salts of the lee become precipitated, and fall down to the bottom, but the iodine remains in the spirit of wine. If the spirit now be distilled off, and the residue be then heated with a little sulphuric acid, and manganese, or red lead, the iodine sublimates in the neck of the retort. About one drachm of iodine was thus procured in the presence of the members of the new Chemical Society of London, from ten wine gallons of soap lees, and this substance is therefore unquestionably, as Mr. Accum observes, the best substance for obtaining iodine.

I am, sirs,

your most obedient servant,

JAMES FISHER.

To Messrs. Nicholson and Tilloch.

Extract of a letter from Mr. J. Murray, of Saffron Walden, to the Editors of the Philosophical Magazine of April, 1814.

Iode.

That most singular body, a correct estimate of which seems to baffle our best researches, appears to me to be "gifted" with

a most *inappropriate* title, and the same objections militate against the term *Iodine*. *Iodegene* is at once expressive of its *generating a violet colour* by heat. The term *gas* most inaptly applies, for at *common temperatures* it is not a *permanently elastic fluid*; and if it should ultimately be pronounced to be a *metal*, then, according to the more modern acceptation of the nomenclature, its name will be *Iodium*.

In the external characters of *opacity* and *lustre*, *iode* assimilates to a *metal*, and the circumstance of its forming a *fulminating compound* with *ammonia* is allied to this opinion. The *crystals of iode* examined with a *lens* present *uniformly rhomboidal prisms*. *Iode* is much like *ore of iridium*, a specimen of which I have lately obtained.

I kept for some time a *glass tube* inclosing *iode* in a *tin case*, and on examining it found the tube broken, and that the *iode* had *disappeared*, not a trace of it could be ascertained. I then moistened a slip of *litmus paper* with *distilled water*, and introduced it into the tin envelope. When it was withdrawn, a few *red spots* appeared on it; and as on *contact of liquid ammonia*, the *original colour* was restored; there seemed evident signs of an *acid*.

When *iode* rises in *vapour*, its *odour* is somewhat like that of *chlorine*.

By repeatedly exposing this substance in *vapour*, and the *crystalline state*, to the *sunbeams*, a deposit of a *dew* of a *greenish colour* is effected; so that, though *heat* does not alter it, *light* produces from its *chemical affections* a most important change. Some of the *iode* I have now with me in a *tube hermetically sealed*, has been thus transmuted.

By raising a *perpendicular* to the *iode* in the *state of vapour*, and placing this in the *sunshine*, a *green shadow* is projected.

The *violet vapour*, which rises on application of heat cannot be regarded as an *emanation* thrown off from the *iode*, and which *dissolves the substance*, and holds it *suspended therein*, but rather the *iode itself* *finely dispersed* and *comminuted*; the *alteration of the size of the crystalline particles*, and the *variations of the figures of the groups*, tend to the latter supposition.

Query. Is *iode* the *metallic radicle* of *chlorine*, or of *muriatic gas*, or a substance *sui generis*, elaborated in the *vegetable æconomy*?

J. MURRAY.

Saffron Walden.

Royal Society.

ON Thursday the third of February, a paper by Sir Humphrey Davy was read, entitled *Some further Experiments on Fluorine, and on some other Objects of chemical Investigation.* This paper consisted of three distinct subjects, treated of in succession.

1. Several further experiments were related, made in order to obtain fluorine in a separate state, but they were all unsuccessful. Fluorine has such a tendency to enter into combinations, that no vessels can be procured upon which it does not act. Sir H. Davy considers it as a compound of hydrogen and an unknown supporter of combustion, which he calls *fluorine*. This fluorine has the property of combining with the base of silica and with boron, and it forms an acid with each. The fluorates are compounds of fluorine and the metals which constitute the bases of the salifiable bodies. A number of experiments to determine the proportions of the constituents of these bodies were detailed. Fluor spar when heated with sulphuric acid, increases in weight from 100 to 175.4; but it was requisite to repeat the process eight times to obtain the full effect. If we suppose fluor spar to be a compound of fluoric acid and lime, this result gives us its composition as follows :

Lime	-	-	-	-	73,661
Fluoric acid	-	-	-	-	26,334
					<hr/>
					100,000
					<hr/> <hr/>

But if its constituents are fluorine and calcium, then its composition is

Calcium	-	-	-	-	53,313
Fluorine	-	-	-	-	46,687
					<hr/>
					100,000
					<hr/> <hr/>

According to this statement, an atom of fluorine will weigh 2.294, (supposing an atom of calcium to weigh 2.62.)

2. The second part of the paper was on *silica*. A number of unsuccessful attempts to obtain the base of this earth in a separate state were related. They were made by passing potassium through redhot silica. Potash was obtained mixed with a brown matter, which was converted into silica by the action of

water. It would appear that silica contains nearly half its weight of oxygen; and Sir H. Davy conceives it to contain two atoms of oxygen to one of the base. This would make the weight of an atom of *silicon* (as we may denominate that base) to be two, nearly or almost the same with that of sulphur. Sir H. Davy conceives that *silicon* is not a metal, but analogous to *boron* in its nature. These bodies possess intermediate properties between charcoal and sulphur.

3. The third part of the paper was on *chlorine*. A number of unsuccessful attempts to decompose this substance, and obtain oxygen from it, were stated. Sulphuret of lead was fused in it; but not the least trace of sulphate of lead could be obtained. Various experiments of a similar kind were tried, with an equally unsuccessful result. The author noticed the scepticism still entertained by many persons respecting the nature of chlorine, and the arguments brought forward in order to show that it might contain oxygen. Every candid person, he observed, who had seen the combination of dry muriatic acid gas and ammoniacal gas, must be convinced that no more water existed in the compound formed than had previously existed in the gases. If water were really formed, it would indicate rather the decomposition of azote, than the existence of water as a constituent of muriatic acid. The objections of Berzelius from the doctrine of definite proportions are merely apparent, as the one doctrine can be reconciled to these proportions just as easily as the other. The author concluded his paper with some excellent observations on the mode of reasoning in chemistry. Lavoisier had the glory of first introducing sound logic into the science. Chemists may doubt whether there be such a thing as real elements, but they are not at liberty to doubt whether a substance has been decomposed or not, when all attempts to decompose it have failed. Oxygen has been considered as the acidifying principle; but hydrogen forms at least as many acids as oxygen, and it forms several into which oxygen does not enter at all. All cases of combustion were ascribed to the presence and agency of oxygen; but we now know that it takes place whenever bodies combine with energy; and fluorine, chlorine, and iodine, are entitled to the name of supporters, as well as oxygen. He suggests the possibility that the diamond may be a compound of charcoal and some very light unknown supporter.

At the same meeting, a paper, by Anthony Carlisle, Esq. on *Monstrosity in the Human Species*, was read. The author detailed a number of examples of monstrosity, hereditary in particular families, and propagated from one generation to another. All monstrosity he conceives to take place only in cases where the artificial civilization of mankind has interfered. Thus varieties of dogs, pigeons, &c. are easily propagated.

On Thursday the 10th of February, a paper, by A. B. Brodie, Esq. on the *Influence of the Nerves on the Secretions of the Stomach*, was read. The experiments consisted in cutting the gastric nerves of dogs, and giving them doses of arsenic sufficient to produce death in a few hours. This poison, in common cases, occasions a great secretion of mucus in the stomach and intestines; but in these experiments nothing was found in the stomach after death. Hence the non-secretion of mucus seems owing to the section of the nerves.

At the same meeting a paper was read, by Charles Kœnig, Esq. on the *Human Skeleton from Gaudaloupe*, lately deposited in the British Museum. Mr. Kœnig introduced his paper by an historical sketch of all the facts that have been ascertained respecting fossil bones. Kamper, Blumenbach, and, above all, Cuvier, are the naturalists that have most distinguished themselves in these researches; but hitherto no human fossil bones had been discovered. Hence it was concluded, either that man was of subsequent creation to those animals, the fossil bones of which have been found, or that if human fossil bones exist, they are covered by the existing ocean, and thus forever concealed from our sight. The fossil human bones found at Gaudaloupe appear to constitute an exception to this general rule. They were discovered by the French governor of Gaudaloupe; and the specimen at present in the British Museum was dug up by him at a considerable expense, and was intended for the Museum at Paris. The capture of the island by Great-Britain enabled Sir Alexander Cochrane to send it to the British Museum.

It was found near the sea shore in a calcareous rock of the hardest texture, being considerably superior in that respect to statuary marble. The rock is partly granular, and partly compact. The granular part is a mixture of grey and flesh-red particles. The red particles Mr. Kœnig considers as the *millepora miliacea* in fragments; it contains also a few shells. In

short, it seems to consist chiefly of a congeries of fragments of corallines connected together firmly without any apparent cement.

The bones of the skeleton are not petrified, but retain the usual constituents of fresh bone; and when first exposed to the air were rather soft. The skull and vertebræ of the neck are wanting. The seven true ribs, and three of the false ribs of the left side remain; but on the right side these bones are destroyed, though the sternal part of the true ribs adhere to those on the left side. The sternum is not visible, being probably sunk into the stone. The dorsal vertebræ are all visible, though not perfectly well defined. The fore-arm and finger bones of one hand remain, and one clavicle. The pelvis is pretty entire, and so are the thigh bones. The legs are so twisted in that the fibula is sunk in the stone.

As to the age of this skeleton, there are no data to form a correct estimate, though in all probability it is not very recent. The appearance of the stone shows decidedly that it does not owe its origin to any calcareous deposition similar to calcareous tuff; but that its formation is analogous to that of common sandstone. It contains traces of phosphate of lime, which seem to demonstrate its animal origin.

On Thursday the 17th of February, a paper, by John Davy, Esq. on *Animal Heat*, was read. The author made a set of experiments in order to determine the specific heat of arterial and venous blood. He employed chiefly the blood of lambs. Two methods of experimenting were followed. 1. The relative times of cooling of equal bulks of arterial and venous blood were determined. The specific gravity of the venous blood was 1.050; that of the arterial 1.042. This method gave the specific heat of arterial blood about 0.93; and that of venous blood 0.92. 2. These two kinds of blood were mixed with water, and the change of temperature marked. The results differed somewhat in different experiments. Arterial blood, by this mode of experimenting, came out of the specific heat 0.95, venous blood 0.94 nearly. It appears to me that these experiments of Mr. Davy are liable to two objections, which must prevent us from putting full confidence in the results which he obtained. 1. It is probable that a chemical action takes place between blood and water; therefore the specific heat of blood

cannot be accurately determined by mixing it with water. Suppose we were to mix alcohol with water: the temperature of the mixture would not enable us to determine the specific heat of alcohol. Neither, I am persuaded, would such a mixture enable us to determine the specific heat of blood. 2. Mr. Davy, in his experiments, often drew the venous blood of the animal on one day, and the arterial on another. Now experiments of this kind never lead to accurate results. Whenever you begin to tamper with an animal, you throw it into an unnatural state, and then it is impossible to calculate what sudden changes may be produced on its blood. Mr. Davy made a set of experiments to determine the temperature of arterial and venous blood in animals. The arterial blood was always hottest. In the sheep it was 104° or 105° , while the venous was 103° or 104° . In the ox it was 101° , while the venous was 100° . These results Mr. Davy considers as favourable to Dr. Black's theory of animal heat, and likewise to the notion that the heat depends upon the nervous energy.—*Med. and Philosophical Journal.*

A late Number of the *Journal de Médecine*, contains a case of Anasarca occurring in a man, eighty-four years of age, cured after many other method had failed, by frictions with powder of digitalis, mixed with saliva. Twenty grains of the powder to a coffee spoonful of saliva were rubbed in daily at first, and the quantity increased to forty grains. In about a week, a very copious flow of urine took place, and the patient sweated more than usual. He continued under this treatment about a month, and at length regained perfect health, in which state he has continued ever since, a period of nearly four years.

New Med. and Physical Journal.

M. J. J. Virey has published in Paris, a small pamphlet on the aphrodisiac virtues of several Plants, particularly of the one described in Holy Writ, under the Hebrew name *Dudaim*, which Rachael, on a certain occasion, was so anxious to obtain. This word has been rendered *mandrake* in our version, but Mr. V. contends, that the mandragora differs essentially from the plant called *Dudaim*; and that in particular, this latter being describ-

ed in the Songs of Solomon, as bearing flowers of a very sweet smell, it cannot be the mandragora, whose flowers are completely of an opposite character. The author is said by the Parisian Reviewers, to have demonstrated almost to evidence, from the etymology of the word, the period in which the plant flowers, its several botanic characters, and its physical and medical qualities, that the *Dudaim* is one of the *Orchis* family, and probably the same plant from which salep is prepared. *Vanilla*, obtained from a plant of this class, is known to possess similar powers, as is experienced by those who largely make use of chocolate.—*New Med. and Physical Journal*.

The indiscriminate use of Strammonium, a herb so much puffed off by certain ignorant and interested quacks, in cases of Asthma, has, it is well known, been attended with some unpleasant consequences. It has been lately suggested by Dr. Sherwen, "That every good property of the strammonium may be expected from a similar use of the common white poppy heads: the smoke of which, whether swallowed or inhaled, must be equally anodyne and less deleterious. To obtain the poppy heads in perfection, they ought to be carefully dried while green, before they are arrived at their greatest magnitude. It is propable, that the green leaves, carefully dried, would also be efficacious." From the dried leaves of *Digitalis*, he likewise adds, "Similar effects would probably result; and particularly in that species of asthma connected with œdematous ankles, irregular pulse, and other symptoms of hydrothorax."

New Med. and Physical Journal.

A corpse was lately discovered at the bottom of a burying-place in Bristol, which must have lain there at least 150 years; it was in a high state of preservation, whilst all the bodies lying above it were mouldered into dust. On exposing it to view, the features of the face appeared not to have undergone any alteration, and even the eyes looked like those of a person recently dead. The integuments were of a brownish colour, flexible, like supple leather, and the muscular parts were converted into *adipocere*. The body was contained in a wooden shell in-

closed in a leaden coffin; from there being an opening in the former, stopped with a plug, it is conjectured that some fluid, as wine or brandy had been poured over the body at the time of its interment, to the agency of which fluid, perhaps, the conversion of the animal substance into *adipocere* may be attributed. It was clearly evinced, that the body had not undergone any process of embalment.—*New Med. and Physical Journal*.

Florula Bostoniensis.

Messrs. Cummings and Hilliard, of this town, have just published a botanical work, entitled *Florula Bostoniensis*, a collection of Plants of Boston and its environs, with their generic and specific characters, synonyms, descriptions, places of growth and time of flowering, and occasional remarks; by Jacob Bigelow, M. D. This book contains the descriptions of about six hundred plants, all of which are either native or naturalized. They have been chiefly collected in the neighbourhood of Boston, but as the place of growth of most of them is necessarily extensive, they will serve as a tolerable specimen of the vegetation of the New-England states, and of the country in the same latitude for some distance to the westward.

Late British Publications.

Abernethy's Lectures on the Probability and Rationality of Mr. Hunter's Theory of Life, 8vo.

Beck on Veterinary Medicine and Therapeutics, &c. &c. 8vo.

Goodlad's Essay on the Diseases of the Vessels and Glands of the Absorbent System, being the substance of Observations, which obtained the prize for 1812, affixed by the Royal College of Surgeons in London, 8vo.

Higgins' Experiments and Observations on the Atomic Theory and Electrical Phenomena, 8vo.

Horsley's Remarks on the Pilcaithly and Dunbarney Mineral Waters in the Perthshire, 12mo.

Pears' on the Nature and Treatment of Consumption, 8vo.

Watts's Medical Dictionary, containing an explanation of the terms in Surgery, Medicine, Midwifery, Anatomy, Chemistry, &c. &c. second edition, 12mo.

Works in the Press.

Observations on Pulmonary Consumption; by Dr. Henry Herbert Southey, one volume, 8vo.

The Morbid Anatomy of the Brain in Mania and Hydrophobia, with the Pathology of the two diseases, and Experiments to ascertain the Presence of Water in the Ventricles and Pericardium. Collected from the papers of the late Dr. Andrew Marshall, Lecturer on Anatomy in London, with a biographical sketch of his life.—By Sawry, 1 vol. 8vo.

Pathological Researches in Medicine and Surgery; by J. R. Farre, M. D.—in royal 8vo, illustrated with engravings. These Researches will appear in the form of periodical essays. Each number will contain three or more closely printed sheets of letter-press, and two or three well executed plates.

The Morbid Anatomy of the Liver, being an Inquiry into the Anatomical Character, Symptoms, and Treatment of certain Diseases, which impair or destroy the Structure of that Viscus. Part II. By J. R. Farre, M. D.

An Essay on the Prevention and Cure of Insanity; with Observations on the Rules for the Detection of Pretenders to Madness. By George Nesse Hill, &c.

Observations on those Diseases of Females, which are attended by Discharges. By Charles Mansfield Clarke, Members of the R. C. of Surgeons, &c. Part I. Mucous Discharges, royal 8vo.

NOTICE TO CORRESPONDENTS.

We acknowledge, with pleasure, the reception of the following communications:—

Case of Puerperal Fever with Dropsy, succeeded by Phlegmasia Dolens, &c.; and a remarkable case of Hysteria, cured by the *arum americanum*, &c. By James Thacher, M. D. of Plymouth.

Experiments on the effect of Artificial Respiration, &c. &c. by William Gamage, jun. M. D.

On the use of Sub-Phosphate of Iron in obstructed Catamenia; by Dr. Caleb Miller of Bristol.

We regret that the above papers did not reach us in time to be inserted in this number of the Journal. They shall appear in our next.

N.B. After a considerable portion of the Journal was printed, we were so fortunate as to receive the London periodical publications for March, April, and May, from which we have made many extracts. This circumstance, we hope, will be a sufficient apology for any irregularity in the arrangement of the matter it contains.



Fig. 2.

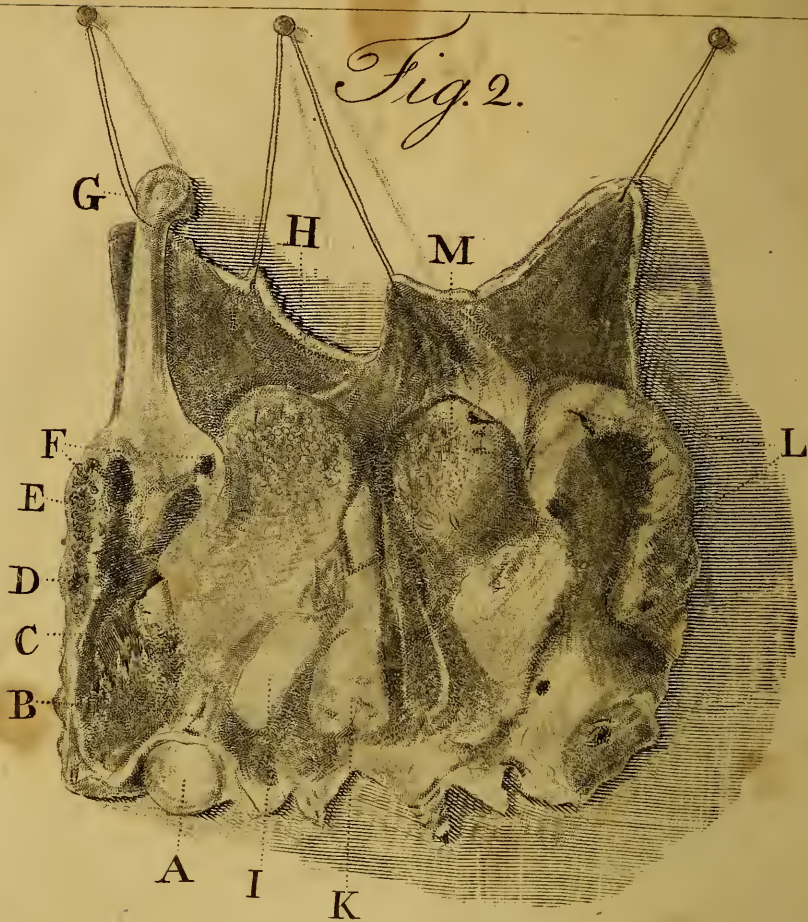
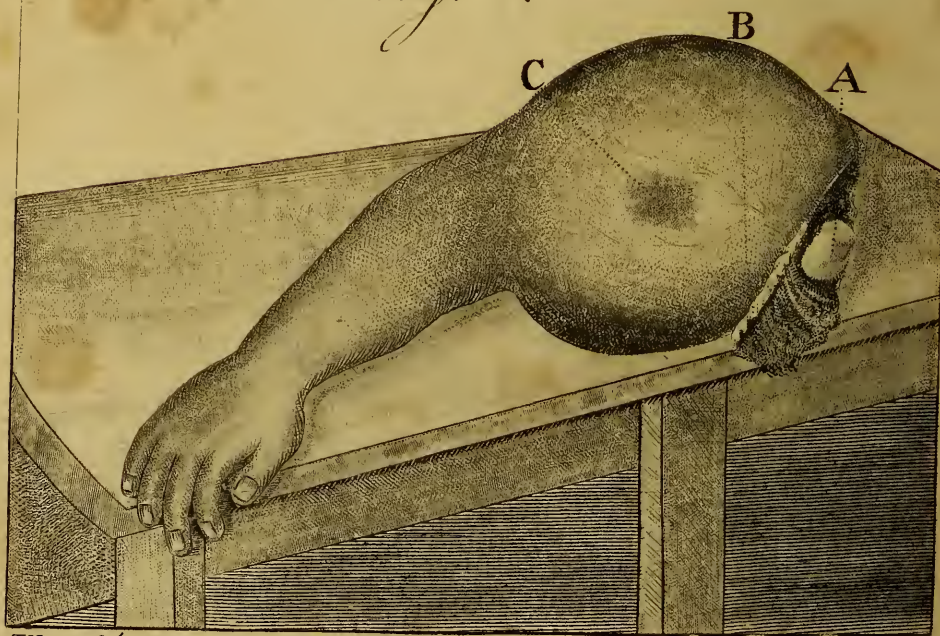


Fig. 1.



T. Young Del.

Hamlin Sc.

Fungus Haematodes.

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OCTOBER, 1814.

No IV.

CASE OF FUNGUS HÆMATODES AMPUTATED AT
THE ARTICULATION OF THE SHOULDER.

BY WILLIAM C. BOWEN, M. D.

[Communicated in a Letter to Dr. John C. Warren.]

DEAR SIR,

IN the month of January, 1813, I was consulted by Peter Carpenter, a respectable farmer, residing in Rehoboth, Massachusetts, on account of an enlargement of his right arm, near the shoulder. He gave me the following account of his case:—
“About the year 1803, he sprained this shoulder by throwing a stone with violence; in a few days, however, the limb recovered from the effects of this injury, and did not occasion further trouble until about two years afterwards, when it became affected with pains like rheumatic, which caused much distress, particularly after exertion of any kind, which was also performed with difficulty. From this time the size of the arm gradually *diminished*, until it became about two inches less in circumference than the opposite one. These symptoms, with the attendant debility, and difficulty of moving the arm gradually increased until May 5, 1812, when the humerus was broken by a man forcibly taking hold of the elbow, while the hand of the same arm was applied to one of the shoulders of his antagonist in the act of tripping. In about five weeks the arm so far recovered,

that he began to labour a little at farming, though every exertion caused much uneasiness; he continued, however, to labour with it until about the middle of September following, when it was again severely injured, by being forcibly jerked backward, by a horse starting while he was leading him. This accident gave rise to great pain, and from that time deprived him of the use of his arm. Immediately after this accident the arm swelled, and a tumor about half the size of a hen's egg was discovered, situated near the lower edge of the deltoid muscle. In about a fortnight a second and distinct tumor became perceptible, and was situated near the insertion of the great pectoral muscle. About the middle of November these tumors began to increase rapidly, and were accompanied with much pain."

At the time of my first examination of this arm it had acquired a size equal, perhaps, to twice its natural dimensions, the tumor occupying principally the anterior and inner part of the arm from the shoulder to a little below the inferior border of the deltoid, and insertion of the great pectoral muscle. It was uneven on its surface, in most parts very hard to the touch and somewhat discoloured.

Convinced that the disease was of that kind, described by Hey under the name of fungus hæmatodes, I did not recommend any thing, satisfied that nothing but the amputation of the limb at the shoulder joint, if it could be effected with safety, would be of any essential benefit to the patient.

About the middle of the month of April following, he again applied to me for advice. The tumor had acquired an enormous size. It measured twenty-six inches in circumference, including the arm, and occupied nearly the whole distance from the shoulder to the elbow joint. Near its centre there was a prominence of a livid colour, and soft elastic feel, communicating to the fingers, when pressed upon it, a sensation of fluctuation from contained fluid. The skin over this part was thin and evidently inclining to give way. The whole surface of the tumor was uneven and elastic, of a delicate crimson hue, with the superficial veins ramifying beautifully over it. The fore arm and hand were œdematous. The patient suffered constant and severe pain in the arm. His general health was considerably impaired, and his pulse wavering from 120 to 130 beats in a minute.

In consultation with Dr. Pardon Bowen, it was agreed to recommend amputation at the shoulder joint, as the only possible way of saving the life of the patient, and even this, under the circumstance of the case, was considered a very doubtful and even desperate remedy. The patient, however, consented to the proposal, and the operation was performed on the 25th day of the same month, (April.)

At the moment of undertaking the operation a difficulty arose, which had not been foreseen. At the time of the last examination, (eight days before,) it was thought that the axillary artery might be tied without much difficulty, although the disease extended high up into the axilla; but having, in these eight days, extended still further in this direction, and the bulk of the tumor having also increased two inches within that time, it was found impossible to tie the artery at this place. I, therefore, proposed tying the subclavian artery, which proposal being assented to by Dr. P. Bowen, this preliminary operation was performed, and the arm then amputated at the shoulder joint. As it was doubtful, from the high situation of the disease, if the shoulder joint did not participate in it, it was judged to be inexpedient to attempt saving any integuments, in performing the amputation; the incisions were, therefore, made in a straight direction from the axilla to the top of the shoulder on either side, and every part having the least appearance of disease, was removed by a careful and tedious dissection. Being thus deprived of the advantage of flaps to cover the surface of the wound, we, in a degree, remedied this inconvenience, by sawing off the acromion process parallel to the plane of the glenoid cavity of the scapula, thus rendering the wound flatter, and securing, by that means, a more complete covering for it, than otherwise could have been possibly done prior to the operation, and during its performance the patient manifested the utmost fortitude and self-possession, but overcome by long suffering and loss of blood, he fainted just as the amputation was completing; he, however, immediately recovered on being laid in the recumbent posture.

Nothing remarkable occurred during the after treatment of this patient. The wound granulated favourably. The large ligatures came away between the third and fourth week, and he walked nearly a quarter of a mile about the fifth week from the day of the operation. Since that time he has improved rapidly

in health and strength, and the wound has continued to heal with a steady and pretty rapid progress.

Since writing the above, the wound has been entirely healed, but has been occasionally affected with slight superficial ulceration in the cicatrix. At present it is perfectly well, and the general health of the patient is apparently as good as it ever was.

October 20, 1813.

FIG. I. Represents the arm as it lay upon the table after the amputation.

- A. The head of the humerus.
- B. Axillary glands.
- C. Sublivid spot.

FIG. II. Represents the diseased part of the arm split open and suspended by strings in an inverted position.

- A. Head of the humerus.
- B. Neck of do.
- C. Portion of separated bone.
- D. Cavity filled with gelatinous fluid.
- E. Broken end of humerus.
- F. Superfluous osseous and cartilaginous matter deposited about the body of the bone.
- G. Condyles of the humerus.
- H. Fungous growth.
- I. K. Small tumors of much firmer consistence than H and K, apparently an indurated and enlarged lymphatic gland.
- L. M. Part corresponding to F. H.

Dissection of the Arm.

The arm having been previously injected, an incision was made through the integuments on the back part which exposed the external membranous coverings of a sac; on making a puncture into this sac, a considerable quantity of brown coloured gelatinous fluid escaped. The arm being then entirely cut through, and the upper portion reflected, the internal structure was beautifully displayed and presented the following appearances:

The sac, which had been first cut into, was externally membranous; but its particles, which were from a quarter of an inch to more than an inch thick, were of a cancellated structure,

and composed of a substance of almost cartilaginous consistence, interspersed with spiculæ of bone; the cells, which were numerous, were filled with a substance of a pulpy consistence, precisely resembling that contained in the general cavity of the sac immediately to be described. This sac, which evidently appeared to have originated in an abortive attempt to reunite the twice fractured humerus, surrounded this bone for about two thirds of its length, and at the lowest part was inseparably united with it, having acquired at this place a dense and truly callous structure. The cavity of this sac was large and, in part, filled with a pulpy matter about the consistence of brain at the commencement of its decomposition, more tenacious, however, and of a colour resembling the fluid which had been discharged, and which formed the other principal contents of the sac. The neck and several pieces of the broken humerus, as well as the broken end of the lower portion of it, lay imbedded in this pulpy matter and were severally united to the surrounding parts by ligamentous bands. After the preparation had been macerated for a short time in water, the greater proportion of this pulpy matter was removed and exposed more fully the internal structure of the sac, which then appeared to be composed of membranous cells of different sizes. The extent and relative situation of the sac will be best understood by a reference to the plate.

From the internal part of the arm, and intimately blended with the above described sac, arose a tumor of considerable size and of a spongy structure, composed of innumerable small membranous sacs filled with a substance of a yellow colour, varying in consistence from jelly to cartilage and interspersed with minute spiculæ of bone. At the upper and internal part of this tumor, there were two smaller and still firmer tumors of irregular shape and of a white colour; one of these resembled very much an indurated lymphatic gland. The three tumors were contained within a membranous covering, which could be distinctly traced in every direction, excepting were it united with the first mentioned sac surrounding the bone. The axillary glands were enlarged and of an elastic pulpy consistence. The muscular fibres of the internal part of the arm were very much extenuated, and formed the outer covering of the tumors on that side. Most of the organized parts of the disease were very

vascular, and beautifully injected with the size injection which had been used.

N. B. This dissection was made about three days after the amputation of the limb.

June 20, 1814.

WHEN I last wrote to you, I mentioned that Mr. Carpenter was sick ; and suggested also, my opinion on the nature of his complaint, and of its probable termination. It is with extreme regret that I now have to announce to you, that he died the 9th instant. Unfortunately it is not in my power to afford you or the public any more precise information concerning the nature of his last sickness than can be obtained from its symptoms, his wife having refused permission to have the body examined after death. This is the more to be regretted as it may on future similar occasions prevent a surgeon from attempting, or a patient submitting to such an operation. Slight ulcerations occasionally appeared in the cicatrix of the wound, but generally soon healed, and were not attended with any appearances of a malignant or specific character, and I always attributed them to irritation excited in the part by improper exercise and exertions, which the patient, though frequently cautioned on the subject, was in the constant habit of making. The last of these ulcerations occurred about a fortnight previous to his death, and the *scale* was still adhering at the time of that event. No other appearance indicated a diseased state of this part, nor did he experience any pain or other inconvenience in *this* shoulder. About the middle of last April, he was attacked with pretty acute pain in his *left* side, attended by an irritated state of the pulse, loss of appetite, and some difficulty of breathing. These were succeeded by general debility, but not so great as to confine him entirely to the house. Being treated by the attending physician for the symptoms of general fever, he recovered so far in about three weeks as to be able to come into town, when he called upon me. He was still considerably debilitated, had a frequent small pulse, and complained of being *short-breathed* on making much exertion. Soon after this he went to Boston to attend the meeting of the General Court, and returned home about the first of June. I saw him the fifth. At this time his difficulty of breathing had increased so much, that at times he was threaten-

ed with suffocation; and he breathed constantly like an asthmatic person. He complained of constant and often severe pain in his *left* side, occasionally shooting to the shoulder of the same side, and across the upper part of the abdomen. His pulse was 117 small and hard, but regular. His countenance pallid and anxious. Tongue furred, but moist. Thirst considerably urgent. Skin in general covered with a clammy moisture, which was very much increased, more especially about the face, by the least exertion. He was extremely weak, and so restless and uneasy, that he did not sit nor lie for any length of time, but changed from his bed to chair, and back again, as might most conduce to his comfort. While in bed, he lay constantly on his *left* side, being unable to lie in any other position, without a great increase of his pain, and difficulty of breathing. When attempting to lie on his *right* side, he complained of a sensation, as if a great weight forcibly compressed the right lung, and was very soon obliged to change his position to prevent suffocation. On examining the abdomen and chest, the first was found tumid and tense at its upper part. The *left* side of the chest was thought also to be fuller than usual, and the pulsations of the heart were removed from the left to the *right* side, there being no evident pulsation in the former, but very strong and even *visible* pulsations in the latter.

The above described train of symptoms continued with little variation until the afternoon of the 9th, when, feeling depressed in his breathing, he desired to be raised from the bed, and in the attempt to rise, suddenly expired.

What has been the nature of this complaint?

Unfortunately, on this head, we are left to conjecture. My opinion, as heretofore suggested to you, has invariably been, that this disease was of the same character with that for which the arm was amputated. If so, it is evident that it had contaminated the system prior to the operation, since the wound, and even the whole right side was not, if we are to judge from the symptoms, affected *primarily* with the disease; and it is even probable that the unnatural pulsations were occasioned merely by a mechanical displacement of the heart, by the morbid enlargement of the left lung. Is it at all probable, that aneurism might have been the occasion of this derangement and of the death of the patient?

Providence, June 20, 1814.

AN EXTRAORDINARY CASE OF ASCITES.

COMMUNICATED BY JOSIAH BARTLETT, M. D.

[For the New-England Journal of Medicine, &c.]

IN July, 1808, Doctor Abraham Haskell sen. of Lunenburg in the county of Worcester, visited Mrs. M. P. aged 63, then residing at Harvard. He found her in the advanced stages of *Ascites*, which had commenced eighteen months before, and for which she had taken but little medicine. He performed the operation of *Paracentesis*, which discharged seven gallons of a gelatinous fluid, tinged with blood, weighing fifty seven pounds and one ounce. In a few months, she gradually filled again, and having removed to Charlestown, related to me the history of her case.

February 10, 1810. I visited her in consultation with Doctors Haskell and Abel Fox, when upon a minute examination, we found her more distended, than we had ever seen a patient with the disease. I then took away nine gallons and three pints, of a limpid fluid, which weighed eighty-four pounds and eleven ounces.

May 26, 1811. She having filled again, I performed the operation, in presence of Doctors Fox and Abraham R. Thompson. The quantity taken, was ten gallons and one pint, weighing eighty six pounds. The fluid was limpid, and she bore the *tapping* better than before.

June 14, 1812. It became necessary to repeat the operation, and I performed it in the presence of Doctors Fox and Thompson. The quantity at this time, was ten gallons and two pints. The fluid was limpid, and weighed eighty-seven pounds and two ounces.

February 20, 1814. She had again filled, and I took away, in the presence of Doctors David Townsend, Thomas Welsh, and George Parkman, nine gallons of the same kind of fluid, which weighed seventy-six pounds. She bore this and the last operations as well as the others.

July 10. She was filled to a larger size, than at any former period. I repeated the operation in the presence of Doctors Townsend, and Welsh, when eleven gallons and five pints, of a fluid still limpid, were taken, which weighed ninety-four pounds.

For some time preceding each of the operations, she was affected with *anasarca* in the lower extremities, but it uniformly disappeared, on the discharge from the abdomen. She was always properly swathed. In about ten days from each *tapping*, until the last, she was about the house, and frequently walked abroad. She made no other complaints, than such as arose from the distention and weight of the body. Her appetite was good, and the first passages were generally regular. After the first operation, she took *Cinchona officinalis*, with *Digitalis purpurea*, and was afterward in the occasional use of *Cinchona*, with *Carbonas ferri*, &c. Her diet and drink were of the most nutritive and cordial kind.

From the last operation, she was in a feeble state, and filled very rapidly. Her appetite was impaired, and she sat up but little. The *tonic* medicines had not the usual effect, and her nights were so restless, as to require *anodynes*, to which she had not been accustomed. On the 9th of August, she was affected with constant *nausea*, and frequent *vomiting* of morbid matter, which increased, with great distress at the *præcordia*, until the 23d, when death closed the scene.

I regret that I could not conveniently inspect the abdominal viscera, but I drew the fluid from the body, which measured seven gallons and four pints, and weighed sixty five pounds. It was turbid, resembling the appearance of water mixed with *pus*, and in about four hours after it was taken, became gelatinous.

An abstract of the quantity of fluid, &c.

	Galls.	Pints.	Pounds.	Ounces.
1808 July	7		57	1
1810 February 10	9	3	84	11
1811 May 26	10	1	86	
1812 June 14	10	2	87	2
1814 February 20	9		76	
July 10	11	5	94	
	57	3	484	14
After death August 23	7	4	65	
Total	64	7	549	14
	

Charlestown, Middlesex, Aug. 26, 1814.

Account of a South American remedy for the bite of poisonous reptiles and rabid animals denominated Algalia, Yerba del Sapo, or contra Culebra.

BY MR. BOOTH, SURGEON IN YUCATAN, SOUTH AMERICA.

[Communicated for the New-England Journal of Medicine, &c.]

THE Algalia was first discovered in Guatemala and brought into notice by the Bishop of Chiapa, Dr. Fernien Jose Fuero, in the year 1801 or 1802. It has not been as yet, that I know of, classified by any botanist ; but I consider it to be nearly allied to the Cotton plant and to the Ochra of South Carolina, which latter it resembles in many respects. Like these it is an annual plant growing to the height of five or six feet, flowering in September and ripening its seed in the month of November. The seed has a peculiar musky smell, like that emitted by snakes, none of whom are, it is said, to be found in its vicinity.

When a toad happened to be bitten by a rattlesnake, it was observed that the wounded animal ran in quest of the plant. The Indians soon made the circumstance public and wonderful cures were effected in consequence, as well in Guatemala, Tabasco, and Mexico as in the province of Yucatan : it is stated in the public papers of Guatemala, that a man who had received twenty five bites from a rattlesnake and was carried home speechless, by the application of this valuable remedy, recovered on the following morning. Horses and dogs are cured by it with the same facility.

It is considered here to be a certain remedy for the bite or sting of any poisonous reptile whatever, taken inwardly as speedily as possible after the bite ; reduced to a powder and infused for a short time in water or wine, applying the sediment in form of poultice to the wound. The hunters and country people are never without a portion of the seed which they chew into a paste, on being bitten, swallowing the liquid part and applying the paste over the bite.

In the cure and prevention of canine madness it is also said to be specific and the high reputation it supports in this province leaves little room to doubt of its efficacy. Whosoever happens

to be bitten by a rabid animal flies instantly for relief to the *Yerba del Sapo*. Three persons out of five, who had been all bitten by the same dog, came for assistance to the writer of this article. They had taken of the Sapo seed and applied, as is customary, the sediment to the wound. They were ordered to be bled and the *Alkali vegetabile causticum* to be applied to the bitten part and to keep the wound open for fifteen or twenty days with *unguentum Sabinae*, rubbing in every night a small quantity of strong mercurial ointment around the bite, taking at the same time an alterative mercurial pill daily, for at least three weeks. These patients all did well till the fifth or sixth day, when two of them were alarmed by an efflorescence, with pain and itching, over the whole body. The pulse being quick and hard, from fifteen to twenty ounces of blood were ordered to be taken away at twice. The blood showed a thick buffy coat, and other marks of inflammation; yet without other medicine they both recovered and have had no return of the complaint.

Dose of the Sapo seed.

Half an ounce of the powdered seed should be infused for a short space of time in three or four ounces of warm water or wine, and when settled, be given the patient to drink, applying the white sediment which remains, in form of poultice to the wound. It is seldom necessary to repeat the dose and when the seed cannot be procured, its place may be supplied by the green leaves pounded, drinking the juice and applying the bruised leaves by way of poultice.

BOOTH.

Merida in Yucatan, 5th March, 1814.

No perceptible effects are produced by a dose of the Sapo seed taken by a person in health.

Note — *A parcel of the seeds of this valuable plant, intended for our botanic garden at Cambridge, was unfortunately lost.*

CASE OF SECONDARY SYMPTOMS OF SYPHILIS.

BY FRANCIS MOORE, M. D.

[Communicated for the New-England Journal.]

THE subject of this disease is a female aged thirty-eight, who is known to have had the venereal disease in a violent degree three or four times, the last of which, there is good reason to believe was unskilfully treated, and of course imperfectly cured. More than a year had elapsed from the time of her last affection, during which time she had enjoyed such a state of health as gave her confidence that the disease was fully eradicated. When I first saw her, the submaxillary glands on the left side were swollen to an enormous size, and a venereal node of considerable magnitude appeared on the superciliary ridge of the frontal bone, above the outer angle of the left eye. I immediately ordered the application of mercurial ointment to the tumors, and the internal use of the blue pills. Her mouth very soon became affected and continued so several weeks without checking the disease in the slightest degree, both of them proceeded rapidly to ulceration. In the mean time another node appeared on the external condyle of the right os humeri, which soon became a very extensive and extremely virulent ulcer, threatening the total disorganization of the part and the loss of the limb. The ulcer over the eye assumed a most frightful appearance, occupying a large extent of the frontal bone and spreading to the temporal; the upper eyelid was near falling off, hanging only by a small shred near the inner angle; the probe could be passed along the bone denuded of its periosteum under the eyebrow to the nose.

The submaxillary glands, after several days free discharge, completely healed.

After the unsuccessful use of the usual remedies, mercury, nitrous acid, &c. for several months, I consulted a neighbouring physician who I knew had some experience in this disease; he observed, he had never known a recovery under circumstances so malignant,

At this time the ulcer on the arm nearly embraced the whole joint, throwing out enormous fungi, with profuse sanious discharge. I every day expected the patient would fall by hæmorrhage, occasioned by erosion of the humeral blood vessels. Feeling unwilling to remain an idle spectator of the ravages of disease, and the case being a desperate one, I thought myself warranted in having recourse to experiment.

From the known fact that those articles which have been most efficacious in curing venereal affections contain oxygen in large proportion, and under the influence of an opinion which has always been a favourite one with me, that astringents are of extensive use in the treatment of most ulcers, I was induced to seek for a substance uniting these two properties. As the *red oxide of iron* embraced both these qualities in an eminent degree, I resolved on giving it a trial. I simply mixed the red oxide of iron finely powdered with hog's lard, in the proportion of one part of the iron to two of the lard. In the use of this application for a few days, the discharge was diminished in quantity and altered in quality, the fungous growth was repressed and cicatrization soon commenced. In about three weeks the sores almost healed, in two more they were completely cured; but not without leaving the elbow joint in an anchylosed state. The iron was at the same time given internally.

From the success attending its use in this case, I was led to apply it to some troublesome ulcers on the face having a strong resemblance to cancer, with the satisfaction of effecting a complete cure, after the unsuccessful use of various remedies.

I have been induced to state the above cases, not from any reliance on the antisyphilitic virtues of the oxide of iron; but from a full persuasion that the success attending its application in the cases above cited, entitle it to a high rank among the remedies for ill conditioned ulcers resisting the ordinary modes of treatment.

Note.—In relating the above to a medical friend, I was referred to "Dr. Carmichael's Essay on the effects of carbonate and other preparations of iron upon cancer." I derive much satisfaction in finding my opinion in accordance with such high authority, and will urge it as an additional inducement to give the practice a more extensive trial. I have delayed giving publicity to this case, to ascertain the permanency of the cure; my patient

has now enjoyed perfect freedom from her complaints six months.

Ipswich, 4th May, 1814.

Case of Puerperal Fever with Dropsy, succeeded by Phlegmasia dolens, Gastritis, and spontaneous Hydrophobia. Also a remarkable case of Hysteria, cured by Arum Americanum, with some observations relative to the medical virtues of that plant.

BY JAMES THACHER, M. D.

[For the New-England Medical Journal.]

AN amiable and accomplished lady, aged about twenty, a native of Denmark, having married a young gentleman of this town, performed a voyage from Copenhagen, during the first months of gestation, and arrived here in October, 1812. The vessel was ill calculated for the voyage; no comfortable accommodations could be afforded, and by close confinement, constant exposure to wet, and frequently to the most imminent danger, Mrs. T. was subjected to sufferings which none but the firmest constitutions could sustain, and which required the courageous spirit of a heroine willingly to encounter. Fortunately, however, she experienced little interruption to her health, or the amusements of the polite circle, until the seventh month, when her lower extremities were severely affected with œdematous swellings, and attended with circumstances indicating depletion by the lancet. Having, in a feeble condition, advanced to the usual period, she experienced a laborious and protracted parturition, by which she was greatly exhausted, and immediately after she was seized with strong convulsions which continued about five minutes. Every proper application was instantly resorted to and she had no recurrence of convulsions. No unusual circumstance intervened till the fourth day after child-birth, when she was visited with coldness and shivering, severe pains over her forehead, flushings in her face, great anxiety and restlessness. The region of the uterus, and whole abdomen soon became tumefied, extremely tender and painful to the touch. To these succeeded pains in the back, hips, and sides, with laborious respiration. The lochial

discharge, and secretion of milk were diminished, and both were in a few days altogether suppressed, and these were followed by a total indifference about the condition and welfare of the child. The urine was turbid, and in small quantity, skin hot and dry, pulse weak, small, and about 120 in a minute, great thirst, with a dark brown tongue, prostration of strength and watchfulness. The formidable assemblage of symptoms characteristic of puerperal fever, was now completed by the accession of nausea, vomiting, and frequent discharge of dark coloured fetid excrements. The abdominal tension, and soreness, were great, and the pain so acute, that the weight of the bed covering was uncomfortable, and the least motion induced sensations of the keenest distress.

The inflammatory symptoms were such as appeared to justify the employment of the lancet. I accordingly took eight ounces of blood from her arm. An emetic of ipecacuanha was next administered, and mild laxatives and enemas were employed occasionally during the whole course of the fever. Small doses of calomel and opium, and sometimes tartrate of antimony, or ipecacuanha conjoined, were my principal remedies during the first stage. Fomentations to the abdomen, and frictions with camphorated oil, and tincture of soap and opium, were ultimately applied. On the fourth and fifth days succeeding the attack, a remission of the fever occurred, and decoction of cinchona and tincture of opium were prescribed. Great distension, soreness, and pain about the abdomen, and extending to the groin, with frequent liquid fetid stools still continued, as also anasarca swellings of the lower extremities and deficiency of urine. On examination, an effusion of fluid in the cavity of the abdomen, or between the peritoneum and the abdominal muscles was clearly ascertained. Having derived no advantage from diuretics, I resolved to try the effects of vesication, and on the seventh and eighth days, I applied two large blisters to her thighs, and by her request, two others to her legs, and also one to each hypochondrium. The effects of these applications were truly remarkable; a copious discharge of limpid water issued from the vesicated parts, and a prodigious quantity of urine was evacuated, which, with the alvine discharges, continued to be involuntary for some time. The immediate consequences were, a subsidence of the anasarca swellings, and a great abatement of the tension, and sore-

ness of the abdominal muscles and integuments. A calm and refreshing sleep ensued, and the most distressing symptoms were in a considerable degree alleviated. Still, however, the extreme debility of the system, with a small and greatly accelerated pulse, and ghastly countenance, almost forbid the hope of a favourable issue. Digitalis, and other diuretics were duly exhibited, and by the use of pulv. ipecac. et opii, a free perspiration was preserved. On the tenth and eleventh days, a cessation of the involuntary evacuations took place, the abdomen is less swollen, and is free from pain or soreness. She complains of frequent faintness, pulse small and quick, and an extreme irritability of the system, and strong aversion to medicine is manifested. She, however, receives benefit from the use of tinctura cinchonæ; comp. and decoction of cinchona, is directed by way of injection. Another blister is applied over the umbilical region. Doctors Hitchcock and Hayward are consulted, and the result is a persistence in the means employed, though an unfavourable termination is apprehended. Twelfth and thirteenth days she complains of increased pain and swelling of the abdomen, with diarrhæa, and diminished secretion of urine; she has flushings, heat and accelerated pulse. Digitalis, crem-tartar, &c. are again resorted to with some effect. Fourteenth to 16th, pulse continues frequent, urine scanty, stools thin and fetid, pain and swelling considerable. No return of lochia, nor secretion of milk, yet her appetite for food and her strength have increased, and appearances in general are more favourable.

Seventeenth to 20th.—My patient is now to be cruelly afflicted with a new and unexpected complaint, *Phlegmasia dolens*. She is seized with rigours, which are followed by a lymphatic swelling extending from her hip, to her foot, on one side, attended with much pain, soreness, and irritative fever. The morbid state of the intestinal discharges still continues, and also a deficiency of urine in despite of the constant employment of diuretic medicines. Having formerly combated phlegmasia dolens successfully, by a moderate mercurial course, I was induced to prescribe, in this instance, calomel and opium in small doses, and pulv. ipecacuanh et opii occasionally, accompanied with solutions of muriate of ammonia, acetis plumbi in vinegar as local applications to the diseased limb. Although the most distressing symptoms were soon alleviated, many days elapsed before essential amendment was observable.

Having for a length of time directed my assiduous application to the tedious and difficult circumstances of Mrs. T. and exhausted every resource without the desired result, it occurred to me that the *Eau Medicinale d' Husson* cautiously administered, might have the effect of relieving her agonizing pain, and diminishing the irritable state of her system. Accordingly on the twenty-third day from her first attack, fifty drops of the preparation described in the American New Dispensatory, second edition, as directed by Dr. Jones were given, which produced ease, but excited some nausea and a free perspiration. Before my next morning visit the dose had been repeated, and in four hours after she was affected with severe vomiting, which lasted about two hours; considerable bile and mucus were thrown off, and she was much exhausted. In the afternoon an unusual garrulity, and some confusion of intellect were perceivable. She complained of a distressing sensation of heat, and burning in her throat, and extending to her stomach, with great thirst, her pulse about a hundred. These unpleasant appearances gradually increased, and in the evening she was much discomposed, and enjoyed no sleep. From these threatening circumstances I was not surprised to find on the 25th day, that my miserable patient was assaulted with genuine *gastritis*. She was now exercised with intense heat in her throat, and region of her stomach, extreme restlessness, anxiety, and distressing thirst, with a quick and hard pulse. She manifests a strong aversion to her best friends, whom she had been in the habit of cherishing with the most endearing affection, and is averse to all kinds of food and drink. Although asafoetida and opium were administered by way of injection, no sleep was procured, and she continued through the night in a state of wild delirium, or morose sullenness.

Twenty-sixth — The climax of miseries is now completed by the appearance of *spontaneous hydrophobia*.* She labours under distressing thirst, calling most earnestly for water, and when pre-

* Spontaneous or symptomatic hydrophobia, in this instance, may be distinguished from rabid hydrophobia by these particulars. The patient did not manifest that remarkable degree of sensibility from the contact of external air, nor did the sight or touch of liquids excite convulsive agitations, spasms, or horror, nor was she troubled with that copious flow of viscid saliva and foaming at her mouth, which generally attend rabid hydrophobia. The leading features of both bear a striking affinity.

sented, she rejects it with horror, and throws it from her with violence. A bowl of water being held near her, she paddled in it with her hands, and yet begged earnestly for water. She made every effort to avoid its approach to her mouth, and once, when her efforts were overcome, she spirted it over the bed, or in the face of her attendants, and crushed the bowl into pieces. During thirty-six hours she swallowed not a glass full of liquids; the juice which she drew from sliced oranges, was her only sustenance. She became exhausted, her extremities were cold, and nature seemed to be sinking under a load of accumulated miseries. From the very irritable state of the system in general, and stomach in particular, little or no medicine could be administered, and my chief dependance was on appropriate injections; opiates thus introduced, sometimes produced a calm sleep, and afterwards some liquids were swallowed. A blister was applied to the region of her stomach, and another over her shaven head.

For a considerable time she exhibited a spectacle of horror and commiseration, by reason of a total alienation of her mental powers. Her aspect was sorrowful; now morose and sullen, and now she has a respite, and appears to suffer the keenest anguish by a consciousness of her deplorable condition. Again she relapses, and becomes outrageous, rending her clothes, and striking with her hands every object within her reach; no persuasion can soothe, no severity restrain the violence of her actions. At length after the symptoms of hydrophobia had subsided, she was singularly affected with nervous agitation, tremor, and universal cramps and jaw-lock. She was deprived of the power of articulation, the muscles of her face, and her limbs, were contorted in a manner different from any thing of the kind which I had ever before witnessed; and these unpleasant circumstances continued with more or less severity for eight or ten days. In fact, a most distressing combination of symptoms, and morbid affections continued to harass this unfortunate lady for about forty days from the period of parturition. At several stages of her successive attacks, it appeared as though life had been spun out to the last attenuated thread, or poised on a balance of the most delicate cast, but the restoring powers prevailed, and every morbid affection gradually yielded to the elastic efforts of the constitution, except that the natural periods of menstruation remain suspended.

In regard to the remedies employed, I have only to observe that calomel and opium conjoined, proved most decidedly efficacious, by obviating the inflammatory tendency, arresting the progress of Dropsical affection, correcting morbid Diarrhæa, and probably by subduing Phlegmasia dolens.

The blisters so extensively applied, produced the most obvious and essential good effects, by abating local inflammation, relaxing spasm, and setting free an accumulated flood of water.

If the history of the case which I have thus faithfully detailed, furnish no lesson of practical instruction, it must nevertheless, be regarded as imparting some particulars interesting to the mind of sensibility and benevolence, and as a rare example of the powerful efforts of the human constitution in combating the assaults of disease.

Case of Amenorrhœa and Hysteria.

A young woman about 18 years of age labored under suppressed menstruation in consequence of exposure to wet and cold. Convulsion and hysteria, harrassed her almost incessantly for several weeks, and according to the estimation of her friends she suffered no less than 700 severe paroxisms or fits.

She was also afflicted with a remarkable tension, and swelling of her abdomen, and a bloatedness of the whole surface of her body, that the slightest touch would occasion intolerable pain. At length, her extremities became rigid, and immoveable, and her jaw so completely locked, that she was unable to articulate, and liquids could only be introduced through the vacuity of a lost tooth, and during several weeks, it was found requisite to keep a piece of wood constantly between her teeth. In this situation she was committed to my care as one of the paupers of this town. Knowing that this patient had undergone the usual treatment by a variety of antispasmodic and other medicines, in the hands of an experienced physician, without relief, I considered her as a fair subject for an harmless experiment, which if it should not diminish, certainly could not aggravate her sufferings. Having experienced the efficacy of *Arum Americanum*, skunk cabbage, as an antispasmodic, I resolved to avail myself of this obstinate and difficult case, to test more satisfactorily, the real properties of this domestic plant. Having prepared a strong infusion of the dried root, I directed half a cup-full to be given

every few hours, and to avoid all uncertainty relative to its effect, I strictly enjoined a discontinuance of all other medicines until I could be satisfied by my own particular observation. On the succeeding day when she had taken 8 ounces, I perceived a general perspiration, and softness diffused over the surface, and the remarkable soreness was in some degree mitigated.

I directed a persistence in the use of the remedy, and a gradual amendment was daily observable. The rigidity of her limbs was evidently diminished, and on the third day she was able to raise one of her hands to her breast which she had not done for some weeks, and all the muscles became more flexible. In about ten days her jaw was relaxed the piece of wood¹ was dispensed with, and she was enabled to converse and swallow without difficulty. The swelling of her abdomen however, had not subsided, nor was the menstrual obstruction removed. To effectuate this last object, I had recourse to the *Polygala Senega* as recommended by Dr Chapman,* and by a faithful employment of this root alone, for about sixteen days, she was favored with a restoration of her accustomed evacuation, which was of a pale colour and extremely fetid. The free use of her limbs was immediately restored, and all her complaints gradually vanished and without the aid of any other medicine her usual good health was soon re-established.

The antispasmodic virtues of *Arum Americanum*, were in this remarkable case demonstrated in the most satisfactory manner, as the experiment was so conducted as to preclude the possibility of deception or fallacy.

The emmenagogue powers of *Polygala Senega* are perhaps more equivocal; how far the change which the *arum* had previously produced in the system was conducive to the restoration of the uterine function, cannot in my view be precisely ascertained. And in some other instances the *Seneka* has disappointed my expectations.

P. S. I feel it incumbent on me to observe on this occasion, that the valuable properties of *Arum Americanum*, ought to be more extensively known, and the use of it more generally adopted. In my hands as well as in many others, this simple domestic root

* See New-England Medical Journal vol. I, p. 107, and American New Dispensatory, 2d edition, p. 307.

has surpassed in efficacy as an antispasmodic, the principal medicines of that class in the *Materia Medica*. The root should be taken up either in autumn, or early in the spring, before the plant begins to vegetate. The roots should be cut transversely and carefully dried. When given in powder, about forty grains twice or thrice in a day will be found sufficient, though it may be increased to double that quantity with perfect safety. In some rheumatic affections, and in cases of erratic pains resembling rheumatism it has proved an admirable remedy, and I believe without stimulating or inducing heat in the system. In one recent instance of distressing Dyspnea, a few doses of the powder performed a complete cure. The American New Dispensatory, second edition, will furnish further and more particular information relative to this plant. It is however, important in this place to apprize the incautious of an error liable to be committed in collecting the root, which would be productive of the most fatal consequences. The skunk cabbage, is frequently confounded by name with the white hellebore of our meadows, with which in the spring, it has some resemblance, but which possesses properties of the most active and deleterious nature. This error has inadvertently been introduced into that valuable periodical production the Massachusetts Agricultural Repository. In a very respectable communication by Justin Ely, Esq. (No. I. Vol. III. page 57,) it is observed that Dr. J. Elliot directed seed corn to be steeped in a decoction of the roots of "*swamp hellebore, called skunk cabbage,*" to secure against the annoyance of birds and vermin. Now it is certain that the root of skunk cabbage can impart no poisonous quality to corn, and it is equally true, that even a few grains of the root intended by the writer would prove infallibly fatal to the human subject. Hence the importance of a particular discrimination in language easily understood. Skunk cabbage has no stem, and the first part that appears in April and May, is the flower. The leaves next present themselves in a conic form, closely rolled together, expanding nearly ovate as they rise, supported by foot stalks. They are large, nearly resembling the leaves of cabbage, giving out a rank, disagreeable smell similar to that of the skunk or polecat. A remarkable part of this plant is the spatha, or sheath. It approaches to an ovate form, open on one side, and bellied out on the opposite; its apex is somewhat twisted, and in colour it is beautifully variegated with

scarlet and yellow. The globe of flowers is nearly of the same colour, and the seeds are large, roundish, single, and inclosed in the receptacle. The root is large, of an irregular form, furnished with numerous fibrous branches nearly the size of goose quills. When fresh it is very pungent, and acrid, but this is gradually lost without essentially injuring its virtues.

Veratrum album, known also by the various names of white hellebore, swamp hellebore, poke, and Indian poke, is often found occupying the same swampy ground with skunk cabbage. The leaves are long, and broad, and are handsomely plated; its stalk attains to the height of two or three feet, terminating in June in a spike of flowers and seeds. The root is bulbous, and sends off fibrous branches similar to skunk cabbage, but is more nauseous, bitter, and acrid, burning intensely the mouth and fauces.

Plymouth Mass. June 1st, 1814.

Editor's Note.

For the sake of precision in the use of names we take the liberty to remark that the common *swamp hellebore* or *poke root* of this vicinity is the *Veratrum viride* of Aiton a different plant from the European *V. album*. Skunk cabbage is at the present day known by the name of *Pothos fetida*. Its Linnæan name is *Dracontium fœtidum*. The name *Arum Americanum* has, we believe, hardly been used since the time of Catesby.

*Account of the effects produced by eating a poisonous plant, called
Cicuta Maculata.*

BY DR. JOHN STOCKBRIDGE.

[Communicated for the New-England Journal of Medicine, &c.]

ON the 2d day of May last I was called to visit three boys, who had been eating a poisonous root. The eldest, about fifteen years old, immediately after receiving the root into the stomach, vomited and had an inclination to stool. While this discharge was taking place, he was seized with violent convulsive fits, with frothing at the mouth, which continued about one and a half hours, when he died, and had been dead half an hour when I arrived.

The second lad, about seven years old, had taken a less quantity, had vomited several times, and had an inclination to sleep. The pupils of the eye were somewhat dilated—the countenance was pale—pulse very feeble, and beating 65 in a minute, and every few minutes he would complain of a sensation of universal distress, with oppression at the stomach.

As the stomach had been well evacuated, and there had been no discharge from the bowels, I directed castor oil to be given and enemas used till this should be accomplished ; in the mean time the powers of life were to be supported by a little brandy and water frequently given, and the extremities kept warm by friction, and the application of heat. He soon began to revive and was relieved, except the vomiting, which continued sixteen hours, when a little *milk* and water was given, after which it entirely ceased, and in twenty-four hours he appeared perfectly well, except being a little debilitated.

The other boy, about five years old, had taken about the same quantity as the second, and had vomited repeatedly, which he continued to do every few minutes. During the intervals of vomiting he lay in a deep sleep. The pupils of the eyes were greatly dilated, and did not contract when a candle was presented. The pulse was almost, and at times quite imperceptible—the whole body and extremities were cold, with a death-like paleness, resembling that of a drowned person, and there were frequent twitchings of the muscles of the body and extremities.

The same treatment was ordered for this as for the other lad, with the addition of Tinct. Opii Camphorata, twenty-five drops of which were given every two hours in mint water. In six hours he began to revive—in twelve the vomiting ceased—in thirty-six he was able to walk about house, and was soon well.

The quantity taken by the eldest, as nearly as can be ascertained, was about one drachm, and each of the others took about half that quantity.

This plant is found in great abundance in this vicinity, in low interval land, which seems to be its native soil. It is however sometimes found in high land, where it is of very luxuriant growth. The stalk is from two and a half to four feet high, round and tubular. It is umbelliferous, and the flowers, which appear in July, are white like the elder. I send you a specimen of the leaves and flowers. The root, which is dark coloured, and about

two and a half or three inches long, is generally divided into two branches, which run off from each other at an angle of about forty-five degrees, and in May have on them many small, white, fibrous branches. The root and indeed the whole plant has a rank, strong smell, similar to what is vulgarly called "Life of Man," for which it was mistaken by these lads, and which, in the spring of the year, the dry stalk very much resembles.

I have made considerable inquiry of physicians and others in this neighbourhood, and can find no one who is acquainted with this plant. Several persons have said it was very poisonous, but no one has been able to state any facts, upon which this opinion is formed, except Mr. Crooker, the father of the above named lads. He was two or four years since advised to use the root of *Life of Man* as a substitute for tobacco, and being deceived by the appearance of the stalk, he got the root of this poisonous plant instead of the *Life of Man*, which grows very plentifully in the same soil. He chewed a small piece of the root and swallowed some of the juice, (he thinks very little however) and this soon had a powerful effect. He felt an universal distress—his stomach was oppressed—a cold sweat burst out over the whole body—his strength failed, so that it was with the greatest difficulty he reached the door of his house, which was about forty rods distant, where he sat down, and soon vomited. This afforded relief, and after an hour or two, he was as well as usual.

A few years since, viz. July 6, 1810, a lad six or seven years old went into the low-land round one of our docks, and pulled up a root, some of which he ate. Not many minutes after, he was found on a neighbouring wharf in violent convulsive fits, which continued about three hours, when death relieved him of the most awful and exquisite sufferings I ever witnessed.

After death I was permitted to examine the contents of the abdomen, which were found in a sound state—the stomach contained a little watery fluid, and in the intestines were found three worms.

On examination I find great quantities of this plant growing round the dock where this lad procured the root, of which he ate, and there is just reason to suppose that his death was occasioned by this deadly plant.

In passing through one of our streets a few days since, I noticed a quantity of the stalks of this plant, and on inquiry found that

several persons had gathered the root for the purpose of making a beer, supposing it to be the Life of Man—immediate notice being given, its use was prevented.

This plant, sir, may be perfectly well known by you and others in your neighbourhood ; but the general ignorance respecting its proper name and poisonous qualities, which prevails in this vicinity, has induced me to lay before you the foregoing statements of facts, and to request information on this subject. And, in order to prevent any farther accident, it seems necessary the public should be made acquainted with its deleterious nature. You will therefore be at liberty to make such use of the contents of this communication, as you may think proper, and at the same time I shall be happy to answer any inquiries you may wish to make.

Bath, August, 16, 1814.

Note on the above.

The plant described above, appears from the specimen accompanying Dr. Stockbridge's letter, to be the *Cicuta Maculata*, known in many parts of the country by the name of "Snake-weed." It is not unfrequent in meadows and by the side of brooks rising to the height of from three to six feet. The stalk is smooth, branched at top, hollow, jointed, straited and commonly purple, except when the plant grows in the shade. The leaves are compound, about three times pinnate, their stalks furnished with long obtuse stipules, which clasp the main stem with their base. Leaflets oblong, acuminate, serrate, the serratures very acute or mucronated. The flowers are small, white in umbels without a general involucre. The partial involucre consists of very short, narrow, acute leaflets. The fruit is somewhat oval, compressed, striated or furrowed, tipped with the remains of the calyx and the two divergent styles ; and finally separating into two oblong hemispherical seeds.

This plant has great natural affinity to the *Cicuta virosa*, an European species, which has long been known as a most violent, narcotic poison. It affords another instance of the dangerous properties of umbelliferous plants growing in watery situations ; which, with the exception of *Angelica* and a few others are always to be suspected of poisonous qualities.

J. B.

*Cases of Amenorrhœa and some other Complaints, treated with
the Phosphate of Iron;*

BY DR. CALEB MILLER.

[For the New-England Journal of Medicine, &c.]

CASES OF OBSTRUCTED CATAMENIA.

April 18th, 1812—CASE 1.

A YOUNG Lady, aged about twenty-seven, consulted me on account of the above complaint, which had continued for two months. She informed me, that since the disappearance of the usual evacuation her appetite had failed, and she had become very much debilitated. She was a lady, possessing a delicate constitution, and at this time the slightest exercise produced great fatigue.

A short time since, I had prepared some of the phosphate of iron for cancerous complaints, and thought I would give it a trial in this disease; I ordered half a drachm to be taken three times a day, provided it should agree with the stomach, together with a nutritious diet.

22d.—The medicine had agreed very well with the stomach; her appetite and strength increased. Advised a continuation of the medicine.

May 1st.—The wished for evacuation had taken place, and the patient possessed more strength than she had for some months past.

CASES 2 and 3—*September 30th, 1813.*

I was desired to visit two young ladies that were sisters; they had laboured under obstructed catamenia for three months, during which time they had taken a variety of medicines, but none appeared to do them the least good; their health had become much impaired, so that they were unable to endure the least fatigue. In this situation, I advised them to take about a drachm of the phosphate of iron, if it should sit well on the stomach.

30th.—The medicine agreed very well, and an increase of their appetite had taken place, with an increase of strength. I thought proper to continue the medicine.

October 10th.—They had taken the medicine according to direction, and their health became very much improved. Their countenances became quite florid; they moved actively, and were in good spirits. Recommended the medicine to be continued in rather larger doses.

19th.—The wished for effect had taken place. They considered themselves as enjoying good health, and returned to their employment.

January 14th, 1814.—CASE 4.

A young lady, aged twenty, who lived at a distance, had laboured under the above mentioned complaint for one year, had become much emaciated and enfeebled, so that she was unable to make use of the slightest exercise. During this time, she had the advice and prescriptions of a number of the faculty, and finding but little benefit in their directions, had almost given up every hope of getting well.

One of her friends came to me to get some of the medicine I made use of in that complaint; I ordered for her the phosphate of iron, a drachm three or four times a day, should it sit well on the stomach. On receiving the medicine I understood she disliked it very much, and believed it would not do her any good; but she concluded to give it a trial. She took it for about five weeks, when the wished for discharge took place in the usual quantity. She did not take but about half of the medicine I sent her, which was about eight ounces. I understand she since enjoys very good health.

January 20th, 1814.—CASE 5.

A young lady, aged twenty-eight, had the above mentioned complaint for four months; she was a lady possessing naturally a delicate constitution and had become very much debilitated; her extremities were so cold, she said, they were not comfortable, day nor night; and even when I was talking with her, she would move from her seat to the fire to warm her, and often raised a frothy matter from her stomach in the morning. Her friends supposed her to be fast approaching to a consumption. I had at this time just prepared some of the *sub-phosphate*

of iron, of which I ordered her to take a drachm three times a day.

30th.—The medicine had been given according to direction, and it set very well on the stomach; her appetite and countenance were much improved and extremities warmed. I recommended a nutritious diet, and a continuation of the medicine.

The distance of my patient being considerable, I could not make it convenient to make her another visit soon; but if the medicine did not sit well on the stomach, desired to be acquainted with it. I, however, did not hear from her till the first of April, when one of her neighbours informed me, that her health was restored.

I saw her a few days since, when she informed me, that her extremities had recovered their usual warmth, and she enjoyed a better state of health than she had been accustomed to for some years past.

Cases of Obstructed Catamenia under the care of Dr. Calvin Martin, transmitted to me January 14th, 1814.

CASE 1.

A young lady, aged twenty-one, who had the above complaint for fourteen months, and a fixed pain in her stomach twelve months, attended with considerable curvature of the spine. Nothing she had taken had been of any service. From a knowledge of the good effects of the sub-phosphate of iron in such complaints in the hands of Dr. Miller, I was induced to give it a trial in this case. I ordered her to take a drachm of the article three or four times a day, and in five weeks the catamenia appeared; the tone of the stomach was restored, and the curvature of the spine disappeared. She continues, at this time, to enjoy good health.

CASE 2.—March 18, 1814.

This was a case of five months standing. It was accompanied with pallid countenance, low pulse, and cough. The lower extremities were œdematous, and the patient was so feeble as to be confined to her bed. I administered the sub-phosphate of iron, in doses of a drachm, three times a day. In five weeks

the catamenia appeared; the œdema subsided; her health was confirmed and she returned to her usual laborious employments.

Rehoboth, March 20th, 1814.

To a lady, fifty-five years of age, very much debilitated with violent trembling of the head and hands, I prescribed the sub-phosphate of iron. I was led to prescribe it, from having observed it beneficial in cases of extreme debility. She began to take it in doses of a drachm, three times a day.

25th.—The strength is very much improved and the tremors abated. She has complained of slight pain in the region of the uterus, and a small discharge of blood from that organ has appeared. Alarmed at this circumstance, I ordered the medicine to be desisted from. Thinking, however, it might have been accidental, I recommended it to be used again. In twenty-four hours it brought on a profuse discharge from the uterus. This soon subsided, and she has regained her health. She had previously to the above mentioned symptoms enjoyed good health, and the catamenia had ceased for one year before the period at which I was requested to see her.

Bristol, May 25th, 1814.

I was consulted in a case of two months continuance. The patient was a woman aged forty, of strong constitution, the mother of seven children, and had been remarkably free from uterine diseases. I ordered a drachm of the phosphate of iron to be taken on going to bed, it being in the afternoon, and to continue to take it three times a day. She rested very well, and I found in the morning, that a profuse discharge had taken place from the uterus.

Experience must determine if this sudden relief was the effect of accident or of the medicine.

A Case of Pregnancy, in which the Sub-Phosphate was used.

March 12th, 1814.

I was desired to visit a female aged eighteen, who informed me she had not been regular for eleven months. She had the appearance of a woman in the sixth month of pregnancy. She positively declared, however, that this was not the case.

I, therefore, ordered her the phosphate of iron, in doses of two drachms, three times a day. On about the tenth day from commencing its use, she was delivered of a female child of about the seventh month, as appeared by her affidavit afterwards given. This is the only case of pregnancy in which I have given this medicine. Dr. Martin has, however, tried it in two instances, but strongly dissuades from its use, as it excites pain and distress in the region of the uterus.

The following are two Cases communicated to Dr. Miller, by Dr. Winslow of Swansea.

MAY 13, 1814.

Sir—I have made trial of the medicine your politeness favoured me with, and find it useful, particularly in the amenorrhœa. The first trial I gave it was in a case of obstructed catamenia, in a young lady of about seventeen years of age. She had been in this situation near a year, had tried various remedies, as alethic cathartics, tincture of castor, asafoetida and myrrh, opiates and warm vapours used at the time, when nature seemed to make some effect, but did not succeed. I had about this time received some of your medicine, (*sub-phosphate of iron*.) I made a trial of half a pound, giving a large tea-spoonful three times a day, which brought on the desired evacuation. The patient immediately became convalescent, and has remained healthy for two years.

CASE 2.

A young lady about twenty-four years of age, about two years since had been accustomed to bleeding at the lungs. Countenance pale, pulse somewhat low, with general debility, and every appearance indicating a pulmonary consumption. In eighteen months after the attack she became obstructed; I had never regularly attended her, but being called at this period, I directed some tonic remedies, together with your medicine, which, in about ten days, has given great relief as it respects her obstruction and general health.

In dyspeptic cases I have not done it justice, perhaps, in not making trial of the medicine alone, having generally combined it with other remedies.

Yours, &c.

JOHN WINSLOW.

The following are Cases of Cutaneous Eruption, in which the Phosphate of Iron appears to have been very beneficial.

The subject of the first case was a child eight years old. The disease was first thought by the parents to be the itch, and treated as such. The disease would yield a little to the treatment, but recurred immediately on laying it aside.

The extremities and body were covered with scales. I was at this time consulted, and recommended the phosphate of iron, as much as the stomach would bear, three or four times a day. I was absent at sea, about two months from the time of commencing the use of this article; when I returned I found the child in perfect health, and he has had no return of the disease.

May 20th, 1813.

A lady aged twenty-eight, of good health, had, for eight years, been troubled with a cutaneous disease of the hands, which was most violent in spring and autumn, but at no season was she exempt from it. Having used a variety of articles of the materia medica in vain, I was consulted and recommended the phosphate of iron in the usual doses, two or three times daily. In two months her hands were perfectly well; she continued free from the disease on the fourth of June when I last saw her.

The following is a Case of Dyspnœa, in which Phosphate of Iron was found useful.

OCTOBER 4, 1813.

The subject of this affection was eight years of age. From the history of the case, I supposed it was originally an inflammation of the lungs which took place about the middle of August. It had been very severe, and the usual remedies had been resorted to, viz. venesection, antimonials, blistering, digitalis. I found the child very much emaciated; the respiration very short and difficult. He seemed to be actually panting for breath, and the only posture which he was able to support was a reclining one. The least dust threatened immediate suffocation. All other means having failed, I thought myself author-

ized to make use of the phosphate of iron, for I thought if the lungs were not actually in an ulcerated state, an increased absorption of oxygen in the lungs might possibly restore the child, and, for this purpose, thought proper to make use of the phosphate of iron. I ordered it to be given in doses of about half a drachm, once in four hours, if the stomach would bear it, and observed to the mother that its beneficial effects would be indicated by an alteration for the better in the respiration. Business prevented my calling on this child again before a week had elapsed. The medicine had been faithfully given, and I found my patient able to sit up in bed, that his respiration had improved, and that his cough was very much relieved; I ordered the medicine to be continued, and the quantity increased.

16th.—Every symptom diminished, child walks the room; ordered the medicine to be continued, and to be used as freely as the stomach would bear.

28th.—Dyspnea perfectly relieved; the cough still remains; medicine continued.

May 28th.—Child has regained his health; I have used no medicine but the phosphate of iron, except occasionally small doses of tincture of opium.

OBSERVATIONS.

I have given the phosphate and sub-phosphate of iron in all cases of dyspnoea, where debility was the cause, with the happiest effects. I have made use of these preparations, in a variety of cutaneous eruptions, particularly in that species called vulgarly the salt-rheum, and with great success. In some cases, I was obliged to continue its use two months together, and if, as in some, the disease re-appeared, it readily yielded to the remedy again.

I now give it in all cases of debility and dyspepsia, and nothing has answered so well. In obstinate cases, combination of aromatic and bitters with it, are useful. In some cases I have given half an ounce at a dose. But this dose has generally operated as a cathartic on the bowels. It sometimes constipates. In the former cases I add opium and astringents; in the latter, aloes. From what I have observed, I should recommend doses of, from half to one drachm, repeated every two to six hours. In some cases a larger dose would be advisable.

No particular ill effect, in my practice, has followed the use of large quantities. Experience, however, will determine the proper doses, and I will conclude by remarking, that the cases in this paper are not the only cases of obstructed catamenia in which the phosphate of iron has been used, and *that in no case has the medicine failed of producing the desired effect.*

Rehoboth, June 1814.

OBSERVATIONS ON THE PLAGUE AS IT LATELY OCCURRED IN MALTA.

BY A. BROOKE FAULKLAND, *Physician to the Forces.*

UPON the pathology and treatment of this most unmanageable of all diseases incident to humanity, the plague, the late experience of medical men in this island, I regret to find, contributes but little to what is already so imperfectly known on the subject. Every attempt to accommodate its phenomena to the operation of general laws, or to discover any thing approaching to a successful method of cure, either by experiment or speculation, has shared the same unfortunate fate as in all former ages.

Such detached notes as I have been enabled to collect from personal observation and practice, I shall here throw together, rather to satisfy the curiosity of my friends who have solicited the offering, than with any expectation of materially benefiting the world by their importance.

Under the disadvantage of hindrance from visiting patients in the Maltese Pest-Hospitals, I am necessarily precluded from communicating many facts from my own experience, which I should otherwise have been enabled to do. The privation I have, however, attempted to make up for by conferences with some of the most intelligent practitioners in the island; the results of which, together with my own observations and reflections, it will here be my purpose to render some account of.

The plague, above every other distemper with which I am acquainted, either by reading or experience, is one of the most irregular type, modified in its symptoms and appearances to a degree surpassing all belief and every attempt to explain, ap-

parently by difference of constitution, age, temperament, manner of life, and other constitutional peculiarities in its victims. Most usually, however, its first approaches are marked by some of the following signs: headach, sickness, debility, stupor, rigors, vertigo, vomiting (of a vitiated bilious matter;) pain of the back opposite to the region of the kidneys; suffusion of the eyes; an appearance of countenance resembling that of a person recovering out of a severe fit of intoxication, and inability to stand upright, not unlike what occurs in that state; quick pulse; whiteness of tongue; costiveness; occasionally diarrhæa. Fewer or more of these symptoms, for the most part, characterize the disorder very early after its accession. But it sometimes happens, that, without any other previous indication, glandular tumors give the first alarm of its presence.

Of the state of the pulse, I regret to say, I am not prepared to give any satisfactory account, as medical men were all alike absolutely interdicted from informing themselves upon the state of this function. By intelligent authorities, I have been confidently informed, that, at an advanced period of the disease, the pulse was so very much accelerated, as to render every attempt to count it almost impossible, the pulsations feeling rather to succeed each other in a continued stream than marked by any distinct intervals.

Apparently modified by the same peculiarities of constitution, &c. the character of the concomitant fever becomes extremely irregular, assuming every shade of variety from synocha down to the lowest degree of typhus, and, in some instances, having accessions of rigor, not unlike an irregular species of intermittent.

Thirst, the never-failing attendant of all other diseases which are accompanied with febrile symptoms, is not invariably present in the plague, even in the most urgent cases. In patients under excruciating distress, and at the very acme of the disorder, I have known this symptom either wholly wanting or very moderate. The like remark holds of want of appetite. Throughout the disease, this function is not only not impaired, but augmented to a degree bordering on voracity.

The alvine evacuations are commonly of a darker appearance than natural. I have observed them of a greenish tinge, and mixed with scybala. When lumbrici accompany this state of the

bowels, which is not unfrequently the case, they indicate a very unfavourable disease. This greenish colour of the stools was particularly remarkable in the patients in whom I observed voracity of appetite, and would seem to shew that this symptom was occasioned by the generation of a strong acid in the stomach and *primæ viæ*.

It is a striking circumstance, that the patients, often at the commencement of the disease, are averse to admit of their being ill, and that they persist tenaciously in holding the same opinion, until matters proceed so far as to render any confession on the subject unnecessary.

The suddenness with which the plague attacks its victims is altogether incredible, persons being known to enjoy every appearance of good health a few minutes before its attack. The fatal termination is often not less rapid, occurring in a few hours. Certain cases, (though comparatively few,) have been protracted for a fortnight or three weeks before the patients have enjoyed any perfect exemption from danger; and, in some rare instances, after every apparent danger was survived, a phthisis or dropsy has supervened and proved fatal. This occurrence takes place, as might be expected, in persons of a very lax fibre and debilitated habit. Yet, seldom do seven days elapse, upon an average, from the first period of confinement, until the prognosis is decided with sufficient certainty.

Death very rarely follows a gradual extinction of the powers of life. In the greater number of cases it is ushered in unexpectedly by some violent delirious effort, or suddenly terminated in convulsions.

Delirium attends the plague in all its varieties and gradations, though in some cases there is no observable disturbance of the mental faculties at any time of the disease. In others this symptom is diversified from a state of the lowest insensibility, to the very highest imaginable degree of excitement, resembling the fury, and accompanied with the actions of the maniac.

The state of the urine is various, being sometimes crude, at others high-coloured, and differing alike in point of quantity; but I did not see, nor could I learn, that the remission or aggravation of symptoms was indicated by any visible alteration in the appearance of this evacuation.

The accounts in circulation relative to the interval that passes from the first application of the pestilential poison until the production of the disease, are very discrepant. Whilst some persons are stated to have been attacked almost immediately after the noxious contact, others were represented to have continued well an incredible length of time, before any symptoms became evident. But I am certain, that no conclusive experiments have been instituted into this matter, as the people always strove to conceal their illness, along with the history of it, as long as in their power, knowing, perhaps, what they had to expect from the disclosure, and the consequences of removal to the Pest-Hospital,—that bourne from whence so few travellers returned.

About sixteen or twenty days are generally considered to be the greatest interval between the application of the cause and the first evidence of the complaint.

The matter of infection, of whatever nature it is, seems certainly to be of a very specific kind, as only communicable by the application of infected substances to the skin : at least the present times have as yet afforded no good reason for confidently believing, that it is received through any other medium than that of contact with the human body, *directly or intermediately*.

The many instances which have happened of whole families escaping the infection, after one or two of them had been removed labouring under severe symptoms of the disease, would seem to prove beyond a doubt, that a certain concurring state of the body was absolutely necessary for the reception of the pestilential virus. Several very remarkable cases of this were narrated to me, and some I have myself noted, of patients being taken from the bosom of their families in the most distressing disease, and with perfect impunity to those with whom they had communicated;—children from their mothers, and husbands from their wives. Yet these families had used no kind of precaution whatever, not so much as an attention to common cleanliness. To enter into a detail of such instances, would itself be a voluminous labour ; they are matter of the most public notoriety. To go no farther than the regiment De Rolls, the medical care of which was in a great measure entrusted to myself, I have known cases of plague taken out of the very heart of a company, and of so urgent a kind, as to prove fatal in a day or two, whilst the rest of their comrades continued to enjoy very perfect health. Nei-

ther was there here any obvious cause to which their escape could be ascribed,—oil frictions, fumigations, or any other description of precaution, prevention, or antidote. My own Callesse man and two of his children died of the disease, but his wife perfectly escaped, as did also his brother-in-law, who was constantly in the habit of familiar intimacy with them all. I am not acquainted with a poor family in Malta, who are more negligent of personal cleanliness than this I am speaking of. As to any precautions of rubbing with oil or vinegar, they were wholly ignorant of any thing of the kind, until I directed them, considerably subsequent to their misfortune.

Though, for my own part, I have a strong persuasion that the infection of plague may be not less liable to be received by that species of contact which can reasonably enough be imagined to take place by inhalation, I am not enabled to adduce evidence sufficiently satisfactory to decide the fact. I find there still exists a great contrariety of sentiment upon the subject. To determine the truth with precision would require a deliberate experiment, which I fear few would be disposed to make. The escapes of the attendants, who were necessarily much and closely engaged about the persons of the infected, holds out presumptive proof, that the matter of infection is at least not of so virulent a kind as to be carried deletriously any great distance in the atmosphere.

Instances of reinfection have not been frequent, I am informed; yet, in one individual, I knew it to take place three times, in each succeeding one the symptoms growing milder. The example here alluded to furnishes an exception to the general remark, that the plague proves most fatal to those of a lax fibre. This person was of a remarkably delicate habit. Upon the comparative degrees of susceptibility of men, women, and children, I could not obtain any precise intelligence, or rather the accounts given to me were so much at variance, that little could be inferred from them. I think the balance was, upon the whole, rather in favour of the opinion recorded by some early writers, viz. that the two latter are the most liable to be infected, and that the debilitated of the same sex are more susceptible than the most robust.

As to the diagnosis in plague, it is often a point of much embarrassment to pronounce with absolute certainty upon. The

muddy dull eye, described by Russell, is, in my opinion, without doubt, one of the most leading and faithful monitors of its presence. I seldom found myself mistaken, in regarding a case as plague, when there was any unusual whiteness of tongue, accompanied with this appearance of the eye, even though there was no intumescence or redness about the glands visible, and the patient did not confess any complaint. When this appearance of the eye and tongue concurred with glandular swellings or external tumours, the point was placed beyond a doubt.

With regard to the prognosis, I think it may be generally assumed, that the less severe the affection of the brain is, and the more remote the symptoms from indicating a state of putridity, favourable hopes may be proportionably entertained for the issue. But here, too, our expectations were often suddenly frustrated; some cases which have gone on to prosper for several days terminating unexpectedly in death, whilst others, which continued for whole weeks, apparently in the most hopeless state, have as agreeably disappointed our fears, and been ultimately restored to pristine health and vigor.

Buboes, when they come out tardily, denote commonly an ungracious disease. When they go on speedily to suppuration, or when they recede whilst the other symptoms meliorate, there is the fairest hope of a prosperous event. The same may be stated of the condition of the carbuncles.

I need hardly observe that subsultus tendinum is a symptom which augers an irrevocable fate.

It has been communicated to me with more confidence than most other peculiarities of the plague, that the nearer the glandular or other tumours or external appearances approach to the head, the prognosis is proportionably unpromising.

A diarrhæa coming on early to any great extent, when the brain continues much affected, is accounted among the insignia infaustissima.

The spontaneous supervention of an early perspiration is a flattering omen. It seldom fails to relieve the febrile symptoms, and to be followed by general amendment.

In some cases the glandular swellings do not make their appearance until very near to death, when some slight tumefaction is to be seen by a close inspection. Instances are not wanting after death, of these swellings subsiding entirely out of sight.

After death, several cases have occurred of petechiæ manifesting themselves for the first time, when I have seen, also, very broad livid spots, covering the whole of the lower part of the trunk and extremities, of about the diameter of a quarter of an inch each.

The petechiæ which I observed upon the dead were various in point of size and colour; on one of a dark or dusky brown; on another, inclining more or less to lividity; on one they were almost imperceptibly minute; on another as large as flea-bites. Their seat is commonly over the breast, arms, or wrists, but they come out likewise upon the back or lower extremities.

The carbuncles that fell under my observation were of that kind described by authors as the wet carbuncle, sloughing into very deep sores, and attended, during the progress of inflammation, with an extremely painful burning sensation. At first they arise like a phlegmon, gradually acquiring a diffused and highly inflamed base, and having, not far from the apex, a concentric areola of a deep livid, and more internally of a cineritious colour, and a glossy appearance. The eruption of carbuncles is not confined to any particular part of the body or limbs, though more commonly their situation is upon some part of the extremities. Of the *dry* carbuncle, or that occasioned by the confluence of the pestilential eruptions, called blains, I have not had personal experience, nor have they been very often noticed by others. I have, however, received some account of them, as they occurred in a few cases, and which pretty exactly corresponds with the description given of them by authors, being of a dark gangrenous colour, without much pain, with little or no inflammation, and not elevated above the surface of the skin. They are accounted to designate a very unfavourable disease.

Irregular and inconstant as are all the phenomena of this perplexing disease, its varieties, as remarked on the late occasion, may, I think, be classified under the three following species, viz.

I. That in which, at the first attack, the energy of the brain and nervous system is greatly impaired, indicated by coma, slow, drawling, or interrupted utterance. In this description of the disease, the tongue is white, but little loaded with sordes, and usually clean, more or less, towards the centre and extremity; the anxiety is great; cast of countenance pale; stomach extremely irritable, and the strength much impaired. Rigors and pain in

the lower part of the back are among the early precursors of the other symptoms. This was observed to be the most fatal species of plague, and prevailed chiefly at the commencement of the late disasters. Those who were thus affected sometimes died in the course of a few hours, and with petechiæ.

II. The next species I would describe is, that in which the state of the brain is the very reverse of what takes place in the former, the symptoms generally denoting a high degree of excitement: the pain of the head is intense; thirst frequently considerable, though sometimes wanting; countenance flushed, and utterance hurried. The attack is ushered in by the same rigours and pain of back as in the foregoing. Epistaxis not unfrequently occurs in this class of the disorder. The glandular swellings come out very tardily, and, after appearing, recede again without any remission of the general symptoms. Carbuncles arise over different parts of the body or extremities, which are rapidly disposed to gangrenous inflammation. The delirium continues extreme high and uninterrupted, and the patient perishes in the course of two or three days. Sometimes he lingers so far as the seventh, yet rarely beyond this period, without some signs of amendment. Of this second description, the examples have been very numerous, and were nearly as fatal as the preceding. In the countenances of some, just previous to the accession of the more violent symptoms, there is an appearance of despair and horror which baffles all description, and can never well be mistaken by those who have seen it once.

III. The third species which I would enumerate, is nearly akin to the last, only the symptoms are much milder, and the brain comparatively little affected. The buboes and other tumours go on more readily and kindly to suppuration, and by a prompt and early employment of remedies, to assist the salutary operation of nature, the patient has a tolerable chance of surviving. Cases of this class are often so mild, that persons have been known to walk about in seeming good health, and without any evident inconvenience from the buboes. Of this last species, the instances have, thank God, not been unfrequent, chiefly occurring towards the declension of the malady.

With relation to the means of prevention or cure, I have, alas, little to offer which can flatter our expectations of subduing the enemy, or disarming him of his terrors.

Of the preservatives which have been most universally in repute, washing with soap and water, rubbing with vinegar and with oil, are the principal. But I am yet to learn of any well authenticated instances, which point out that any means of prevention have succeeded so well as a strict and unrelaxing attention to cleanliness, and shunning of contact with persons or things imbued with the contagion. These are the only means I have ever used myself, if I only except the oiled silk dress which I took occasion to recommend for the attendants of every description, in our military plague-hospital. Even without the dress, however, I have been in the habit of approaching close to patients in the most advanced stages of the disease, with no other safeguard than that of a sponge dipped in vinegar held to my face. In the oiled silk dresses, as affording a protection against contact of infected substances, I have the greatest confidence. When persons are constantly obliged to be about the sick, and who have not a disposition to strict personal cleanliness, these dresses are, in my opinion, altogether invaluable as an armour.

Upon the preservative virtues supposed to be possessed by oil frictions I have many doubts, notwithstanding the terms in which they are mentioned by so respectable an authority as Mr. Baldwin, and their antiquity, being recommended by Celsus. I have made much inquiry into the subject, without being able, in any degree, to convince myself of the justice of the opinion which has been entertained of its anti-pestilential efficacy. So early as the time of Diemerbroek, that celebrated professor advised stimulant oil frictions, both as a preventive and remedy in the plague, for which purpose he particularly recommended a combination of the oils of nutmeg, amber, cinnamon, mace, cloves, and some others, with which those who were obliged to go out of doors, or to be otherwise exposed to infection, were directed to rub every exposed part of the body, and over the region of the stomach. In perusing a late authority on this subject, I find there was an oil called, *λαιὸν ἐξ ὀξυς*, *oleo di Gran Duca*, much in repute in Italy as a preventive. I have not been able to ascertain its composition, or indeed whether it was simple or compound. Thus far authorities are in favour of the practice. But, when it is considered what a great length of time has elapsed, since even the latest of the above-cited authors flourished, and what havoc the plague has gone on to spread through the world since, I fear mankind

have not much reason to confide greatly in the conservative virtues of oil, or any other antidote with which books make us acquainted. Like the amulet's charm and St. John's books, which have in their day, too, imposed on the credulity of man, it is to be feared that the belief in the efficacy of oil is revived only in its turn to fall into equal oblivion.

Orræus, physician to the late empress Catherine of Russia, pointedly states, that those who were engaged in occupations connected with animal fats, were most liable to catch the infection of the disease.

But, even though I should not be altogether disposed to discard oil frictions as entirely useless. (for there is certainly some plausible reason for supposing that they may, in some measure, serve to defend the skin from absorbing the noxious matter of the plague,) yet there have been so many instances of persons living in the closest cohabitation with the infected, escaping *without the use of oil*, as well as so few clearly attested cases of persons proved to have come into contact with the pestilential virus having been preserved by *oil alone*, that, in my judgment, the inference of its possessing any certain quality as a preservative against the plague is premature, and destitute of any sufficient support. The fact is, many of those who have most diligently used oil frictions have perished; and there are unfortunately several instances at the present moment in the third garrison battalion, of men being assailed by the plague, who, before mounting their guard, (which was the only time they could possibly be exposed to the contagion) were obliged to apply the frictions of oil with all the punctuality of military discipline. Moreover, an immense proportion of the attendants of the sick in the Maltese pest-hospitals, who were enjoined the use of inunctions, have fallen sacrifices to the disease.

But to reason a little upon the point, how shall we have cause to credit that the application of oil frictions to the surface of the body is entitled to much confidence as a preventive, when we know that it is almost invariably attended immediately after with profuse perspiration? For as the perspirable matter can make its way outward through the excretory pores of the skin with so much facility, is it more unphilosophic to suppose, that when the perspiration has ceased, the subtle virulent matter of pestilential infection may make its way with equal facility inwards through

the absorbent pores, at least sufficiently so as to exert its noxious effects upon the constitution ? Without meaning to reason conclusively, I advance this as mere matter of speculation.

Those who have perused the account of the great plague in London, cannot have forgot the high repute in which tar, pitch, and some other substances were held as defences against the contagion. Indeed, as a farther exemplification of how far imagination is apt to impose upon mankind in these matters, almost every writer, from the time of Procopius to the present, supplies some instance or other of certain things possessing conservative virtues in this disorder. Among others issues obtained the most unqualified credit. Girolami Mercuriale, whose authority as a writer was in no mean estimation for a considerable time among the Italians, when observing upon the efficacy of issues, uses these strong words : “ *Dicam quod ego experientiâ vidi. Possum testari me innumeros hâc peste extinctos vidisse, nec unquam quemquam qui habet cauterium præter unum tantum atque ille erat sacerdos.*” In this assertion, he is supported by several corroborating testimonies of the same time.

I have dwelt the longer on this subject, as it may be of some consequence that the credulity of mankind is not imposed upon, to place confidence in any supposed means of preservation which may only lead to greater risks. Of all the means which have come to us, recommended either in ancient or modern days, as productive of advantage in securing the safety of persons engaged about the infected, I believe none deserves the same degree of faith, as personal cleanliness ; avoiding contact, or using immediate ablution, after a foul contact ; shunning the breath or the vapour exhaling from the bodies of the sick ; ventilation ; the fumes of the mineral acids ; sustaining the animal spirits by generous living, and by exercise ; and lastly, though not less importantly, by the use of oiled dresses, the texture of which is so completely stopped up, as to prevent the passage of the most minute particles of any matter from without. In the dreadful plague, which, almost a century ago, swept off 50,000 inhabitants of Marseilles, it was by these means only, (the mineral acid fumes excepted,) that the faculty of physicians entirely escaped, though engaged throughout the whole of that mortality in the closest intercourse with the infected. The success of the same plan, as pointed out by myself in our military pest-hospital, is a decided

proof of the credit which is due to this practice ; not one of the attendants having been attacked with the complaint, though in constant habits of handling infected substances, and coming into contact with the sick.

All those whom I know to have felt the pulse of plague patients with the naked hand, have, by nothing more than a prompt ablution, escaped with impunity. They were not so much as provided with oil.

Vaccination, though it some time since obtained great repute as a preventive against the plague, and enlisted even the powers of the press in its praise, has not, upon the present occasion, appeared to justify any degree of faith in its virtues. Several observations have been attentively made, the result shewing, that those who had not undergone the operation escaped in just as great proportion as the persons who had been vaccinated.

I have not noticed such striking effects from the variation of atmospheric temperature on the plague as I was at one time led to expect. I am aware, however, that there are not wanting some who imagine, that a diminution in the numbers of the infected was produced by this cause alone. I have, I think, much more invariably remarked, that a high wind, from whatever quarter it came, exerted much more evident effects in diffusing the contagion. Indeed, this was the subject of very universal observation ; the people whom I have conversed with attempting to account for it, by supposing that the particles of contagion might be transported and driven with force from one person to another in the street. Lame as this account of the matter must be admitted to be, it will serve as a confirmation to the justice of the remark, that some increase in the numbers of the sick did very uniformly follow upon occasion of a high wind.

The declension of the malady towards the latter end of the summer and autumn, though ascribed by some to the variation of the atmospheric heat, was the plain and indisputable consequence of the rigorous precautions which then had begun first to be properly enforced. The point I think is proved from the suddenness of this change of measures in diminishing the numbers of the sick, and confining the disease almost entirely to the houses that had been previously infected, whilst the alteration of the thermometer was hardly perceptible.

I shall next proceed to give such an account of the method of cure, as I have had an opportunity of gleanings from persons engaged in attendance about the sick, and from my own practice.

The indications are,

1. When inflammatory symptoms are violent at the commencement of the disease, to moderate them cautiously.

2. To restrain all inordinate efforts of nature, or to support her when exhausted.

3. To counteract putrescency.

4. To evacuate the morbid matter.

These it is proposed to fulfil, by Evacuants, Tonics, Antiseptics, Blisters, Sudorifics.

The evacuants most esteemed by the native practitioners, are mild laxatives,—as cream of tartar, manna, almond oil, &c. particularly this last. It is only at the very first attack that these opening medicines are usually employed by them, and when the bowels are evidently constricted. A purgative, properly so called, is very rarely ever exhibited by the Maltese in this complaint, unless in extremely plethoric habits, and when there is a great phlogistic diathesis; then the Epsom, or *English*, salt, as they call it, is given in a moderate dose.

Bleeding, either general or local, is held to be pernicious, and has seldom or never been had recourse to by the natives on the present occasion. I have myself, however, made trial of it locally, and in habits when, from the state of the other symptoms, and particularly the affection of the brain, I considered it indicated. In this case, I preferred taking away a few ounces from the temples by leeches. I am far from feeling assured, however, that any benefit was derived from the practice, nor am I certain that it has not paved the way for greater mischief, by increasing the indirect debility. It is at best, in my judgment, but a precarious remedy, and I believe it is considered as such by the almost universal consent of mankind, wherever the practice has had a fair trial. I have been informed by one individual, that in a few cases of blood being taken by him from the arm, it threw up a buffy coat, and the patients recovered. By another I was told, that the blood taken in this manner was in a very dissolved state, yet the case proceeded well. These were, by description, all persons of nearly the same habit, and in the same stage of the disease,—robust and plethoric.

When the affection of the brain is urgent, betokened by high delirium or a very low state of coma, I have applied blisters very generally to the temples, the nape of the neck, over the hinder or fore part of the head, or behind the shoulders. Blistering over the abdomen having acquired some degree of credit, I made trial of it also, but cannot give any decided opinion of its advantage. The Maltese practitioners seldom or never apply blisters unless under the buboes, and then only with the intention of promoting suppuration, which they are thought to do. In some rare instances they have put them to the nape of the neck, but without placing any great confidence in their success. Sinapisms have been much more confidently represented to me as effectual, when applied to the soles of the feet, with the view of relieving delirium by revulsion. Mild emetics of ipecacuanha are generally thought beneficial, when administered at the very onset of the distemper; given at a late period, they have not been attended with any success, or perhaps have done positive mischief by determining too much to the brain.

The antispasmodics and tonics most esteemed by the Maltese are, Colombo, Gentian, Peruvian bark, and *Serpentaria Virginiana*, each given in the form of decoction. These are prescribed at a very early moment, when the state of the brain allows of their exhibition, and after debility has begun to supervene.

The sudorific most in use by the natives, is the spiritus mindereri, given freely with plentiful dilution of lemonade, or other mild beverage, and aided by the free use of elder-flower tea. This latter is a favorite remedy among the Turks. My own practice has been entirely confined to the former. I have not been able to learn that antimonials have had any trial among the Maltese in this disease. Used by our military surgeons, antimonials have obtained rather a favourable character, in the form of James' powder, or the pulvis antimonialis of the London Pharmacopœia.

Vegetable acid, particularly lemon-juice, was given very freely in common drink by the Maltese, to which practice the Asiatics are likewise much devoted. But I cannot persuade myself that the promiscuous use of these acids is not pernicious, in cases where there is a strong disposition to the generation of acidity in the stomach and bowels.

The actual and potential cautery have each obtained repute for their efficacy in the maturation of buboes. They were resorted to by the native practitioners on occasion of these tumours coming forward very reluctantly, and when, at the same time, the other symptoms proceeded doubtfully or unfavourably. But when the actual cautery did not soon succeed in promoting supuration, I have been credibly informed, that the tumours have receded, and this recession has been speedily followed by aggravation of all the other symptoms.

When the glandular and other tumours were accompanied with any great degree of pain, emollient poultices gave much relief. After they had degenerated into a sloughing state, warm stimulant applications produced good effects in causing the separation of the dead from the living substance. With the same intention I have seen camphor and oil of turpentine applied with benefit, whilst scarification also materially assisted in expediting this separation.

Camphor, given internally, has long maintained a great share of credit in the treatment of plague, exhibited in moderate doses, being considered useful as a stimulant and antispasmodic, and in certain states of the brain. It has not, however, been much employed by the Maltese. As far as my own observation goes, camphor, like some other medicines, appears to have been extolled for virtues, which experience by no means proves it entitled to.

Calomel has not been in use as a purgative among the native practitioners in the plague. It was in a few instances administered in small doses, as one of those gentlemen informed me, with the intention of co-operating with external mercurial frictions, or applications for the maturation of buboes.

Opium is supposed in some cases to be good, when there is much restlessness, and provided the condition of the brain and other symptoms does not contraindicate its employment. I have myself not given it a trial. When it succeeds in composing the patient, and in favouring perspiration, it becomes a valuable remedy; but it is found necessary to use it with great circumspection.

Wine is not in very general use with the Maltese for the treatment of any stage of the disorder. In my own practice, I could ascribe much advantage to its cautious exhibition, at an

advanced period, particularly when there was much debility and low delirium. I generally directed it to be given in sago, and in moderate quantity. When wine was employed by the natives, the sweet malaga was preferred.

Cordials were resorted to with equal caution as wine.

Some cases were detailed to me by the surgeon of the 3d garrison battalion, in which he thinks he succeeded in arresting the progress of the plague, by the very early and diligent application of mercurial frictions, giving previously not less than 12 grains of calomel, in robust habits, to clear the bowels. Of these cases, this gentleman informed me he had not kept a detail, but, in most of them, besides other suspicious symptoms, he said there was the evidence of tumefied glands. The patients rubbed in the ointment themselves. Bleeding, either general or local, was not employed but in one or two of these cases. The warm bath was tried with a few, and seemed to be of some advantage in assisting the operation of emetics.

I have tried the cold affusion in two cases, in one of which it appeared to produce very immediate good effects. The patient was soon relieved in all his feelings, and there succeeded a perspiration, aided by sudorifics and diluents, which in a short time put to flight all the symptoms. The cold water was applied about the third day after his confinement. Along with the remission of other symptoms, the bubo disappeared. This was a case in every respect such as Dr. Currie describes as adapted to the experiment in typhus. In the second instance, I had not the same reason to hope for its good effects, on account of the length of time that passed previously to its employment, and the exhausted condition of the patient.

A Maltese practitioner detailed to me one very striking instance of the good effects derivable from the sudden application of cold water. The case was that of a man who, in the height of delirium, and labouring under a most unpromising disease, ran violently out of his chamber, and precipitated himself into the sea, from which he seemed to have experienced the most sudden relief. He repeated this a second time of his own accord, and was soon restored to a state of convalescence, from which he perfectly regained his usual good health. This case, too, was one in all respects, from the description I received of it, well suited to the experiment of the cold affusion. The ap-

plication of cold water to the surface, has had no trial in the Maltese Pest-Hospital.

The theriaca continues in some estimation among the Maltese, as a sudorific and febrifuge, and was usually given in the evening.

The Maltese have been under the same restrictions in feeling pulses in plague cases as the English. They consider it themselves as altogether an unprofitable risk among the means of judging of the patient's situation, regarding the state of the other functions as a sufficient direction for every purpose of practice.

Such is nearly the sum of the information I have been enabled to collect upon this disheartening subject ; the result of which, I deeply lament to see, goes but to verify the words of the poet:

*Dum visum mortale malum tantæque latebat
Causa nocens cladis, pugnatum est arte medendi,
Exitium superabat opem, quæ victa jacebat.*

So true is the observation of the celebrated physician, Chicoyneau, that there is no disease in which so many modes of treatment have been devised without effect.

With respect to any point which I have here treated upon the representation of others, I shall hope for every due forbearance, should I have failed, in any respect, in my intention of fully and exactly producing the meaning of my authority. I might have noticed many other opinions, but conceive that what are already stated embody the sum nearly of what is most important to be dwelt upon with any earnestness. In a word, I believe it may be roundly asserted, that, after all this fatal experience, not one single remedy has been stumbled upon in which any certain efficacy was discovered to reside, and that the practice in plague is still at the present day little more than an empirical routine.

No one more sincerely laments than myself, the restrictions which were laid upon scientific investigation, to explore the nature of this destructive disease, particularly as so fair an opportunity of obtaining some useful knowledge respecting it may perhaps never again offer to a British practitioner.

It is pretty evident, from the crude detail, I have succeeded in gleaning of the notions entertained by the practitioners of this island, respecting the treatment of the plague, that they still adhere to the old opinion of its belonging to the class of putrid ty-

phus, and that their practice, with the exception of bleeding, is not far different from that recommended by Sir John Pringle in malignant fever.

It will be easily believed, that, the dissection of dead bodies was a privilege quite out of the question, since the mulct for feeling a pulse, even through a tobacco leaf, and with every possible caution, was not less than fifteen or twenty days close quarantine.

The principal navy-surgeon of this station was confined to his house for twenty-five days, on account of having felt the pulse of a man in his own particular department, and though, after the contact, he used every kind of care to prevent the absorption of the virus. This gentleman, Mr. Allan, was one of the most zealous advocates for carrying the investigations of science to unravel the mysterious nature of this distemper, whose hindrance in so laudable a purpose is the more to be lamented.

It may be proper to notice, that His Excellency Lieutenant-General Oakes, whilst opposing my desire of visiting the Maltese pest-hospital, was pleased to assign as his motive for so doing, an anxiety that the army might not be deprived of medical assistance in the time of need. Could I have myself ventured an opinion upon the subject, in opposition to so high authority, I should certainly not have hesitated to say, that this prohibition of medical officers from visiting the sick, so far from being an eligible measure, was calculated to oppose the most complete impediment against availing the army of any benefit whatever from their advice, by shutting out the only satisfactory inlets to medical knowledge. If this be not admitted, it must follow, I should think, that it was of very little consequence whether medical men were employed or not.

It may be expected that I should say something on the history and introduction of the plague into the island. The most current account is, that of its being brought in by a vessel from Alexandria, laden with linen, flax, and leather. But as there were so many channels through which, from the state of the quarantine defence, this insidious malady may be supposed to have crept in, it appears to me little less than mere waste of time, to take any pains in tracing this event to any particular instance of laxity in the department of public health. It is somewhat remarkable, that the history of the introduction of the

plague, when it made so great ravages on the late occasion in this island, above a century ago, was nearly similar to what is circulated of the present, being attributed to some linen brought from a Levant vessel by a Maltese shopkeeper, which, after producing the disease in all those who first came in contact with it, ultimately disseminated the malady through the whole population. The same delay, too, which proved so fatal in the present instance, was at that time also the cause of the extension of the disorder. Whilst the different colleges on the continent of Europe were referred to for their opinions on the identity of the disease, it was daily gaining ground, and when finally the answers of those colleges arrived, deciding upon the nature of it, a lamentable proportion of the population have already been carried off. So necessary is it to oppose with vigour the first advances of this deadly enemy, and by the earliest moment to be prepared against his attempts. The faculty of Rome, addressing a Maltese physician at that time on the precautions to be enforced for the public safety, emphatically observes, "*Denique licet aliqui negent eum morbum pestis contagiosæ nomine insigniendum, tamen in casu ancipite ubi de publica salute agitur, tutior pars eligenda etiam cum incommodorum, ne serpet latius malum.*" This is the doctrine which was so unfortunately thrown away upon ourselves at the present time. It would not, perhaps, be strictly in place, to produce here any detail of examples to prove the truth of this, else I might, even from my own limited experience of the proceedings of that department, fill a great many pages upon this topic alone.

To pass over every other instance, I may merely observe, that the servants who conducted the first case of plague to the Lazaretto returned in eight days, and mixed at liberty with the population; that the physician who attended this case was likewise left at liberty to go through the city before being subjected to any quarantine restrictions; that the public hired carriages were allowed to take fares, though lined with cotton; that, for several weeks after the plague entered Valetta, the intercourse among the population was more or less promiscuous, the seclusion of people within their houses not being enforced with any punctuality; that even the carter who drove a pest-cart was not put under quarantine restrictions for a considerable length of time, in consequence of which he was in the frequent habit of going out at

pleasure, and marketing for his family, the greater part of whom died of the plague. Since so many instances existed of laxity in the department of public health, can it be wondered that the plague had a rapid and wide circulation? Nay, until the month of July was well advanced, there was not even yet a corps of *trusty* guards organized to give proper effect to any ordinances of public health. The houses of the infected inhabitants were shut up for weeks, without being purified or cleansed, although containing articles of the most susceptible kind, and even living animals, whose escape, it is well known, is liable to carry the disease wherever they went. But, without troubling the reader with any farther enumeration of such instances, the following public advertisement, under the auspices of the Board of Health, will itself sufficiently exhibit the description of *obedience* which was exacted to the regulations of that body. I quote an extract from this advertisement, in the exact terms in which it was printed: viz.

“Advertisement.

“Many of the inhabitants who *may be desirous* of taking every precaution against the scourge of plague, are unacquainted with the necessary measures which should be adopted:” here followed a number of recommendatory rules, and among others, to avoid eating *pork*, and concluding with observing, that “the chief of every family who *wishes* to adopt these precautions, must announce his *intention* to his dependants, who not consenting to conform thereto under the apprehension of the rigorous punishments prescribed for the violation of the quarantine laws, will be allowed to quit the house.

“*Board of Health, 12th May, 1813. J. THOMAS, President.*”

Thus the grand punishment for violating any of the quarantine laws, was no more than that the delinquent should “be allowed to quit his house;” get the disease, of course, and carry it about to his neighbour! What despondent reflections must not such an appearance of blindness to our danger have been calculated to raise in the mind of any one duly apprised of the consequences? I confess I saw it with horror and impatience, which caused me to take pains in pointing out my sentiments freely, and with an earnestness, which, considering the manner in which the offer of my advice was received, nothing but a strict and conscientious sense of my duty could have prevailed with me to do.

I trust it will never be seriously attempted to impute to the Maltese any positive disposition to oppose the laws of the Health Department; for, in justice to these worthy and unoffending people, as far as my own experience has gone, I never witnessed so much truly Christian patience, as they evinced in every instance of compliance with the restrictions imposed upon them; that is, after these restrictions did really come to them in the full shape and authority of law. But until an adequate sanction was provided to give the law the necessary efficacy, we cannot be surprised that the multitude, ignorant of their danger, should not have been, of their own accord, very rigid in the observance of any rules or regulations, which, from the manner of their being executed, it is possible they might have thought were not intended to be very religiously obeyed.

The following few remarks, the result of about half an hour's visit to the Maltese Pest-Hospital, on the second of June, may convey some faint idea of the sufferings and privations to which those labouring under this horrible disease were subjected. These miserable creatures lay within a very short distance of each other, five or six on the floor of the same room; twenty-eight of them were attended by two convicts. They had no change of linen, and were therefore obliged to lie, either without shirts, or in their foul every-day clothes. As my object in requesting permission to visit this Hospital was to obtain some useful knowledge of the disease and its treatment, I was prepared with a series of interrogations to put to the medical men whom I accompanied thither. It will not be supposed that my curiosity was likely to be very satisfactorily gratified, when I was told that there was neither book nor register, of any description, in which the details of treatment, or any history of the cases were noted. The small rooms in which the sick lay not being purified and whitewashed before fresh cases were put into them, became, in consequence, mere hot-beds of fomites.

The report of a very respectable and intelligent practitioner, Mr. Saunders, late of the royal navy, who, like myself, was allowed to visit this Hospital only once, on the ground that the patients might not be disturbed in their last moments, is as nearly as possible coincident with the above. This gentleman farther states having seen both sexes lying in the torments of the disease, in the same apartment, and having asked likewise for some

account of the medical treatment, was very little more fortunate than myself, being referred for his information to a piece of board exposed at the outside of the Pest-House door, on one side of which was written in chalk the medicine for the day, (or spiritus mindereri ;) and on the other, the medicine for the night, (the theriaca,) without any regard to individual peculiarities, age, sex, temperament, habit, condition of the symptoms, or any other particular of the sufferers' state.

Those who have witnessed the scenes of misery occasioned by the disease among the poor class of Maltese, must the more devoutly render their thanksgiving to God for his merciful forbearance to themselves. Whole families have been literally swept off in the space of a few days ; and when a sufferer escaped the common fate of his countrymen, it was but to witness the destruction of any little property he had been possessed of. Bereft, perhaps, of every relative, and every friend he held dear, his return to a desolated abode was all the consolation he had to compensate for the loss of every thing else which could render life desirable.

The proportion of recoveries among the Maltese has been variously stated, but I believe the most authentic account does not place it above one in ten, or thereabouts, on an average. At the beginning few or none escaped, but towards the wane of the distemper, the cases became fewer and milder.

Amidst this scene of calamity, it must afford very inexpressible gratification to know how few of our countrymen have fallen sacrifices to the disease, and that the army has been so far fortunately preserved. The inheritance of a sound constitution and difference in mode of living may probably have very much contributed to confer this greater degree of security. Every credit is certainly due to commanding officers, for their early attention to some of the most necessary precautions. The 14th regiment and artillery enjoyed peculiar advantages in the situation of their barracks, which shut them out completely from all possible communication with the population. The garrison battalion and De Roll's lost the most men, which can only be ascribed to their being placed in situations of greater exposure. In all, our army has not hitherto lost above twenty. I have not, however, seen the returns of the garrison battalion, since it has become a second time infected.

Before I conclude this paper, it is proper to observe, that the information I have collected from the native practitioners, is much more the result of their speculation than practice. Their treatment of the plague, according to every account I have received of it, is very simple and summary. With, perhaps, every inclination to pursue inquiry, and to assist their fellow-mortals, they had certainly but few facilities to encourage them in either the one or other of these offices. Patients were not placed under their care, in the greater number of instances, before the disease was advanced, and when the golden moments for rendering them any assistance had irrevocably passed. As there is no disease in which the maxim of *venienti occurrere morbo* is of such important application as in this, the consequences of delay in sending patients to Hospitals must have been inevitable.

Not having myself any concern with the department of public health, it is not in my power to furnish any of the numerous public papers relating to the progress of this calamity. The task must, therefore, devolve upon those whose connection with that department, or better opportunities, have procured access to these papers. It may, doubtless, be matter of much curiosity to peruse such documents; but from all I have myself seen and learnt, I do not flatter myself with much expectation, that the sum of our knowledge, either upon the nature of the disease, or the manner of treating it, is likely to derive from them any material useful augmentation.

The deaths occasioned by the plague in a space of six months, from April to October, were 3348.—*Edinburgh Medical and Surgical Journal*.

Note.—It is to be regretted that the author of this well written article has not informed us what proportion of those, who were exposed to contact with the sick, escaped the attack of the plague. It does not seem to have entered the author's mind to inquire whether the occurrences at Malta warranted the opinion that the plague is actually a contagious disease.—EDITOR.

ON THE FRACTURE OF THE CARPAL EXTREMITY OF THE RADIUS.*

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[From the Edinburgh Medical and Surgical Journal.]

THE injury to which I wish to direct the attention of surgeons, has not, as far as I know, been described by any author; indeed the form of the carpal extremity of the radius would rather incline us to question its being liable to fracture. The absence of crepitus, and of the other common symptoms of fracture, together with the swelling which instantly arises in this, as in other injuries of the wrist, render the difficulty of ascertaining the real nature of the case very considerable.

This fracture takes place at about an inch and a half above the carpal extremity of the radius, and exhibits the following appearances.

The posterior surface of the limb presents a considerable deformity; for a depression is seen in the fore-arm, about an inch and a half above the end of this bone, while a considerable swelling occupies the wrist and metacarpus. Indeed, the carpus and base of the metacarpus appear to be thrown backward so much, as on first view to excite a suspicion that the carpus has been dislocated forward.

On viewing the anterior surface of the limb, we observe a considerable fulness, as if caused by the flexor tendons being thrown forwards. This fulness extends upwards to about one-third of the length of the fore-arm, and terminates below at the upper edge of the annular ligament of the wrist. The extremity of the ulna is seen projecting towards the palm and inner edge

* This fracture of the Radius is perfectly well known and is described even by Desault, although the author insinuates the contrary. The minute description of the method of recognizing it, has induced us to insert it here; for the accident is very common, and when neglected deranges the arm materially.—ED.

of the limb ; the degree, however, in which this projection takes place, is different in different instances.

If the surgeon proceed to investigate the nature of this injury, he will find that the end of the ulna admits of being readily moved backwards and forwards.

On the posterior surface, he will discover by the touch that the swelling on the wrist and metacarpus, is not caused entirely by an effusion among the softer parts ; he will perceive that the ends of the metacarpal, and second row of carpal bones, form no small part of it. This, strengthening the suspicion which the first view of the case had excited, leads him to examine, in a more particular manner, the anterior part of the joint ; but the want of that solid resistance, which a dislocation of the carpus forward must occasion, forces him to abandon this notion, and leaves him in a state of perplexing uncertainty as to the real nature of the injury. He will, therefore, endeavour to gain some information, by examining the bones of the fore-arm. The facility with which, (as was before noticed,) the ulna can be moved backward and forward, does not furnish him with any useful hint. When he moves his fingers along the anterior surface of the radius, he finds it more full and prominent than is natural ; a similar examination of the posterior surface of this bone, induces him to think that a depression is felt about an inch and half above its carpal extremity. He now expects to find satisfactory proofs of a fracture of the radius at this spot. For this purpose, he attempts to move the broken pieces of the bone in opposite directions ; but, although the patient is by this examination subjected to considerable pain, yet, neither crepitus nor a yielding of the bone at the seat of fracture, nor any other positive evidence of the existence of such an injury is thereby obtained. The patient complains of severe pain as often as an attempt is made to give to the limb the motions of pronation and supination.

If the surgeon lock his hand in that of the patient's, and make extension, even with a moderate force, he restores the limb to its natural form, but the distortion of the limb instantly returns on the extension being removed. Should the facility with which a moderate extension restores the limb to its form, induce the practitioner to treat this as a case of sprain, he will find, after a lapse of time sufficient for the removal of similar swellings, the

deformity undiminished. Or, should he mistake the case for a dislocation of the wrist, and attempt to retain the parts *in situ* by tight bandages and splints, the pain caused by the pressure on the back of the wrist will force him to unbind them in a few hours; and if they be applied more loosely, he will find, at the expiration of a few weeks, that the deformity still exists in its fullest extent, and that it is now no longer to be removed by making extension of the limb. By such mistakes the patient is doomed to endure for many months considerable lameness and stiffness of the limb, accompanied by severe pains on attempting to bend the hand and fingers. One consolation only remains, that the limb will at some remote period again enjoy perfect freedom in all its motions, and be completely exempt from pain; the deformity, however, will remain undiminished through life.

The unfavourable result of some of the first cases of this description which came under my care, forced me to investigate with peculiar anxiety the nature of the injury. But while the absence of crepitus and of the other usual symptoms of fracture rendered the diagnosis extremely difficult; a recollection of the superior strength and thickness of this part of the radius, joined to the mobility of its articulation with the carpus and ulna, rather inclined me to question the possibility of a fracture taking place at this part of the bone. At last, after many unsuccessful trials, I hit upon the following simple method of examination, by which I was enabled to ascertain, that the symptoms above enumerated actually arose from a fracture, seated about an inch and a half above the carpal extremity of the radius.

Let the surgeon apply the fingers of one hand to the seat of the suspected fracture, and, locking the other hand in that of the patient, make a moderate extension, until he observes the limb restored to its natural form. As soon as this is effected, let him move the patient's hand backward and forward; and he will, at every such attempt, be sensible of a yielding of the fractured ends of bone, and this to such a degree as must remove all doubt from his mind.

The nature of this injury once ascertained, it will be a very easy matter to explain the different phenomena attendant on it, and to point out a method of treatment which will prove completely successful. The hard swelling which appears on the back of the hand, is caused by the carpal surface of the radius

being directly slightly backwards instead of looking directly downwards. The carpus and metacarpus retaining their connections with this bone, must follow it in its derangements, and cause the convexity above alluded to. This change of direction in the articulating surface of the radius is caused by the tendons of the extensor muscles of the thumb, which pass along the posterior surface of the radius in sheaths firmly connected with the inferior extremity of this bone. The broken extremity of the radius being thus drawn backwards, causes the ulna to appear prominent toward the palmar surface, while it is possibly thrown more towards the inner or ulnar side of the limb, by the upper end of the fragment of the radius pressing against it in that direction. The separation of these two bones from each other is facilitated by a previous rupture of their capsular ligament; an event which may readily be occasioned by the violence of the injury. An effusion into the sheaths of the flexor tendons will account for that swelling which occupies the limb anteriorly.

It is obvious that, in the treatment of this fracture, our attention should be principally directed to guard against the carpal end of the radius being drawn backwards. For this purpose, while assistants hold the limb in a middle state between pronation and supination,* let a thick and firm compress be applied transversely on the anterior surface of the limb, at the seat of fracture, taking care that it shall not press on the ulna; let this be bound on firmly with a roller, and then let a tin splint, formed to the shape of the arm, be applied to both its anterior and posterior surfaces. In cases where the end of the ulna has appeared much displaced, I have laid a very narrow wooden splint on the naked side of this bone. This latter splint, I now think, should be used in every instance, as, by pressing the extremity of the ulna against the side of the radius, it will tend to oppose the displacement of the fractured end of this bone. It is scarcely necessary to observe, that the two principal splints should be much more narrow at the wrist than those in general use, and should also extend to the roots of the fingers, spreading out so as to give a firm support to the hand. The cases treated on this plan have all recovered without the smallest defect or deformity of the limb, in the ordinary time for the cure of fractures.

* The propriety of this direction is doubted. The hand ought to be turned out as much as possible, and thus secured.—EDITOR.

I cannot conclude these observations without remarking, that were my opinion to be drawn from those cases only which have occurred to me, I should consider this as by far the most common injury to which the wrist or carpal extremities of the radius and ulna are exposed. During the last three years, I have not met with a single instance of Dessault's dislocation of the inferior end of the radius, while I have had opportunities of seeing a vast number of the fracture of the lower end of this bone.

Stephen's Green, February 21, 1814.

In the first number of the third volume of this Journal may be seen an account of some experiments by Mr. Magendie, tending to prove that the action of vomiting depends on the diaphragm and abdominal muscles. In consequence of these experiments, two publications were made in opposition to Mr. Magendie, one of which, that of Dr. Maingault, contained experiments, whose results were in direct opposition to those of Mr. Magendie. In order to decide this interesting dispute, the Society of Medicine, in Paris, appointed a commission, the results of whose labours are here inserted.

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EXPERIMENTS UPON VOMITING :

Performed at the request of the Society of the School of Medicine at Paris.

BY MESSRS. LE GALLOIS AND BECLARD.

[Translated for the New-England Journal of Medicine and Surgery.]

THE society deputed Mr. Le Gallois and myself to make a report on the memoir respecting vomiting, which was read at the meeting of the eighth of July, and which has since been presented in a new form, by Dr. Maingault.

The experiments related in this memoir have been repeated by the author in our presence. But they did not appear to us sufficiently numerous, and varied, nor their result sufficiently clear and certain, which made us desirous of repeating them ourselves, of varying some of them, and of performing others which seemed necessary to clear away the doubts which we entertained upon the subject.

Although these experiments have been finished as speedily as possible, yet they have been attended with unavoidable delay,

and in the mean time Mr. Maingault has published his memoir. We have since thought that, (according to the custom of learned societies) there was no longer an opportunity to report ; but the Society, in dispensing with it, requested us, at the last meeting but one, to make known the results of our own experiments. In conformity to their wishes, we have selected from our Journal the experiments which we thought most proper, which we shall this day communicate to the Society.

SECTION I. *Experiments relative to the influence of the œsophagus in vomiting.*

The different facts which are known of the rupture of the œsophagus, in the exertions of vomiting, have engaged us in attempting to ascertain what is the function of that organ in this act.

EXPERIMENT I. Having made an incision into the left side of the neck of a dog, we seized hold of the œsophagus, drew it out, and detached it from the cardiac orifice of the stomach. Having left it hanging at the cardiae orifice of the stomach, we observed in it alternate motions of contraction and dilatation. We injected into the crural vein three grains of tartar emetic in 1-64 of a* litre of water. After five minutes had elapsed, we repeated the same injection. In five minutes from the second injection, the animal yawned, made some considerable efforts to vomit, with difficulty expelled the froth from his mouth, and in a few minutes, expired. The stomach was filled with pulpy aliments, some ounces of which matter had passed into the left cavity of the chest. The eighth pair of nerves remained untouched. The lungs were collapsed by the air which had found admission into the thorax by the wound in the neck. There was an opening at the cardia of the stomach of about an inch and a half in diameter, and it was attached to the diaphragm by means of the peritoneum.

EXPERIMENT II. We repeated this experiment, upon another dog ; but the stomach was not detached from the œsophagus, below the wound of the neck. We cut the œsophagus at its union with the stomach, and observed that its movements were less than before. A little while after we had sewed the wound in the neck to prevent the air from penetrating into the thorax, we injected three grains of tartar emetic into the crural vein. Seven minutes afterwards, the injection was repeated ; the re-

* About a quart.

spiratory movements became accelerated. The injection was again repeated and there was an expulsion of froth from the mouth. We made a fourth and fifth injection, when the animal after making several efforts to vomit, expired. The stomach was found empty in the left cavity of the chest.

EXPERIMENT III. Having drawn out the œsophagus by a wound made in the left side of the neck, and cut it as low down as possible, we injected three grains of tartar emetic into the jugular vein. The stomach remaining hanging out at the wound of the neck, we observed in it spontaneous motions of systole and diastole. Irritation rendered these motions much more apparent, and they became still more and more perceptible. In ten minutes after the first injection, we made a second, and in a little while after this, the animal was agitated and cried; the œsophagus became cold, and yet it contracted itself successively from above and below in a very apparent manner. Twelve minutes after the second injection, we made a third, at which the animal uttered most piteous cries. The contractions of the œsophagus continued to be propagated from the superior to the middle part; they became frequent, regular and synchronous with those of respiration. After a little while, they were made spasmodically, and during their continuance the œsophagus was strongly drawn up. In the four or five minutes which preceded death, there were well marked efforts to vomit, during which, the œsophagus was stretched, and bubbles of air were expelled from its inferior extremity; it was relaxed again in the intermission of these efforts. The parietes of the thorax and abdomen were equally stretched with the œsophagus whenever the dog made exertions to vomit: he expired in three quarters of an hour after our first injection.

The coats of the stomach were very thick, and full of pulpy aliments. About three ounces had passed into the posterior cavity of the mediastinum. The œsophagus was divided an inch above the cardiac orifice.

In these three first experiments we separated the œsophagus from the stomach by division with the knife, or by plucking it out. In the first and third case there was vomiting into the thorax; in the second, there was no vomiting, but the stomach had been drawn into this cavity, and was empty. In all these instances, we have seen the œsophagus presenting motions of

contraction and dilatation independent of the exertions of vomiting, and we have seen the character of these motions changed in these exertions. These efforts have been well marked in the first part of them, that is to say, during the spasmodic contractions of the parietes of the abdomen and thorax. In two cases, there was an ejection of froth by the mouth. Finally, in these three experiments the exertions to vomit did not occur until some moments before death, and it was necessary in order to produce them, to have recourse to the injection of tartar emetic several times. In general, we have thought that they have been more slowly produced in those cases, when the œsophagus has remained untouched.

EXPERIMENT IV. We endeavoured to see the œsophagus during vomiting ; for this purpose we opened largely the left side of the chest, by cutting the sides near to their two extremities, and we injected six grains of tartar emetic into a vein. But the mediastinum being unable to resist the pressure of the atmosphere, the animal died in a few minutes.

To determine the action of the œsophagus in the rejection of substances by the mouth, and the manner in which they pass from the stomach into the œsophagus, we performed the two following experiments.

EXPERIMENTS V. and VI. In one, we opened the abdomen, made an incision into the stomach, by which we cleared it of its contents ; and introduced through the stomach, cardia and œsophagus, an elastic sound, furnished inferiorly with a canula of box wood, upon which we tied the cardiac orifice, in order to maintain this sound in its place. It came out above by the mouth, and to prevent the animal from crushing it between his teeth, we brought it out through the œsophagus at an opening made in the side of the neck. The irritation of the sound occasioned efforts to vomit, in each of which some water introduced into the stomach, was thrown out by the superior extremity of the sound, emetic tartar was afterwards injected into the jugular vein ; but notwithstanding new and repeated efforts, nothing was returned by the sound. We perceived, after the death of the animal that the passage of the canula was obstructed by some of the solid substances which remained in the stomach.

We see then in this experiment, that every effort of vomiting has brought a certain quantity of liquid through the sound. But

it remains to be determined, if, in ordinary cases, where vomiting is preceded by many preparatory efforts, they do not gradually overcome the resistance of the cardia, or if their object is only to make the substances pass successively from the stomach to the œsophagus. To ascertain this, we performed the operation of œsophagotomy in the side of the neck, and introduced a large sound widened at the bottom, as far as the diaphragm, of which we were assured, by measuring it accurately with the œsophagus after the death of the animal. A quarter of a litre of water was injected slowly through the sound, and the animal did not at first make any particular motion; but as soon as emetic tartar was injected into a vein, he made some efforts to vomit, and at every effort, the water came from the extremity of the sound per saltum. It appeared then, by these experiments, that in ordinary cases, the first efforts of vomiting in which nothing was ejected without, are intended only to make substances pass from the stomach in the œsophagus, and in the last, this canal rejects them outwards through the mouth, and that the first part of vomiting may take place without the œsophagus participating at all in the act.

SECTION II. *Experiments concerning the influence of the diaphragm, and on that of the diaphragmatic nerves upon the contractions of the diaphragm.*

In the experiments which we have witnessed, and in those which we have performed, we have rarely seen the diaphragmatic nerves entirely cut through. They have often been entirely divided on one side, and the diaphragm has appeared more or less loose or relaxed on one or both of its sides, as one or both of its nerves have been more or less completely divided.

In every case where the diaphragmatic nerves have been cut, we have observed, before the abdomen was opened, that its anterior paries becomes prominent during expiration, and folded upon itself during inspiration, which is exactly the reverse of what happens in ordinary respiration. On opening the abdomen, the air entered with some noise into this cavity during inspiration. The abdomen being opened, the diaphragm was strongly raised from the side of the thorax, and this elevation was much more increased on inspiration, which rendered the situation of the epigastric organs, particularly the stomach much

deeper, and of course, submitted it more to the compressive action of the sides. We have known vomiting to take place in some cases where the diaphragmatic nerves were cut ; but only of liquids which had been injected in great abundance, by the duodenum or œsophagus ; and which were discharged in waves, either alone or together with solid matter, after remarkable motions of the hypochondria.

In one instance of this kind where the diaphragmatic nerves were divided, a dog died after great and ineffectual efforts to vomit, which were excited both by the strangulation of the intestine, and the injection of Tart. Antimoniacæ. The stomach in which milk had been injected, contained a mass of coagulum.

The phenomena that the diaphragm presents after the section of the nerves of the neck, appearing to us to depend on paralysis, we made experiments directly to determine the influence that the phrenic nerves possessed over the diaphragm, or rather, we repeated an experiment which we had often performed before, and which had always proved to us that the section of the phrenic nerves completely paralyzed the diaphragm. This experiment consisted in making a large opening into the chest of the animal, so that we could distinctly see the pectoral surface of the diaphragm, and in supporting life by artificial respiration. Having taken a rabbit about a month old, we raised the sternum and a part of the ribs of each side, after which we kept up an artificial respiration, by means of a syringe adapted to this purpose, the canula of which was introduced into the trachea. While the inflation was regularly performed, the animal made no attempt to inspire, and the diaphragm, like all the other inspiratory muscles, were in a perfect state of rest. But whenever we interrupted this operation, the animal, feeling the necessity of its continuance attempted to perform it himself. He raised his sides, and drew down the diaphragm with some force. When we were fully satisfied of the constancy of these movements as often as we interrupted the artificial respiration, we cut one of the diaphragmatic nerves, and immediately the diaphragm became motionless on this side, although it continued its motions on the other : we divided the nerve of the other side, and it became relaxed, and entirely still, excepting by the passive movements which were communicated to it by the anterior parietes

of the abdomen. This experiment frequently repeated, always yielded the same result.

SECTION III. *Experiments concerning the influence of the parietes of the abdomen (independent of the diaphragm) in vomiting.*

In the different experiments which we have seen performed, and in some which we have performed ourselves, vomiting has taken place, after the anterior parietes of the abdomen were opened, but the stomach was thrust under the sides and submitted to their pressure. Vomiting has taken place too when the stomach was placed entirely beyond the action of the sides; but it was a vomiting of liquid matters only, and they were thrown into the stomach in such quantities as to distend it. In a case already cited, where the diaphragm was paralyzed, and the stomach in consequence thrust under the sides; the muscles of the abdomen were divided, and the skin sewed up again, when the animal expired after great exertions to vomit, and the stomach was found filled with coagulated milk.

In one of our experiments, we opened the abdomen of a young dog; his stomach contained a quantity of chyme formed by bread which he had eaten a few hours before: the diaphragm continued its action. We induced efforts to vomit by injecting some tartar emetic into a vein. The stomach disengaged from the hypochondria was rendered altogether independent of the action of the sides. Efforts to vomit took place in a most marked manner; there were at first movements of contraction in the diaphragm, and of depression of the inferior sides: these were all repeated several times, during which, air entered into the stomach, then came on flexions of the neck, with the sudden falling down of the parietes of the thorax, and the opening of the mouth: but nothing was rejected in all these movements which were frequently renewed. In this last case the action of the œsophagus and diaphragm were both insufficient to produce the vomiting of pulpy substances; in the case which immediately preceded it, the action of the œsophagus, and the muscles which move the sides effected this object.

We have seen vomiting after the section of the anterior attachments of the diaphragm, but to prevent asphyxia, it was necessary to sew the anterior parietes, or at least the skin of the

abdomen ; and then the œsophagean ring of the diaphragm, and the œsophagus remained entire. Finally the substances vomited were liquids injected into the stomach in great abundance, which occasionally brought away with them some solid matters.

In a word, we have seen vomiting occur, when the diaphragm either by a section of its nerves, or in some other way, had entirely lost its action. We have seen it take place also, when the abdomen was largely opened, and even when these two circumstances were combined together at the same time. But in all these instances, the substances vomited were more or less liquid. In searching after the causes which concur in vomiting, perhaps, sufficient attention has not been bestowed on the consistency of the substances to be vomited, and the difference of intensity of action, which is requisite on the part of each of these causes.

It is not until after the diaphragm and the abdominal muscles have ceased to contribute their influence in vomiting, that the œsophagus begins to perform the function which we have assigned to it. In fact, the substances brought up, are suddenly rejected and thrown at some distance, by a last effort, not until after many efforts have been for a long time repeated, and accompanied with depression of the sides towards the stomach. This last effort does not seem to be of the same kind with the others, and the depression of the sides is certainly less obvious. It appears as if the sole object of all the efforts anterior to this, is to bring the substances to be ejected from the stomach into the œsophagus, where they gradually accumulate, and that this last effort is constituted by the sudden contraction of the œsophagus to free itself from the embarrassment which they occasion. Perhaps this is the reason why, after nausea continued a longer or shorter time, a quantity of fluid, bilious or other matters are suddenly thrown up without any evident contraction of the abdomen. This may be the reason also, that vomiting never takes place when the canal of the œsophagus becomes contracted so that substances cannot be accumulated in it. The mucous and frothy substances which animals vomit after their stomachs are taken away, and which can proceed only from the œsophagus, seems to confirm our opinions on this subject.

SECTION IV. *Experiments concerning the Action of the Stomach in Vomiting.*

We have seen in our experiments, that during vomiting, and the efforts which precede it, many kinds of movement take place in the stomach.

1st. A movement of general tension while the efforts exist, but this seems to be occasioned by the pressure which the stomach experiences. After the efforts are finished, and in this intermission, the stomach recovers from its state of tension. If we by any means take away this pressure, we remove also this tensile movement. An effectual method of doing this is to keep the animal stretched upon his back, or to disengage the stomach from the hypochondria. It is necessary, also, that the diaphragm should not be paralysed, and that the stomach is not too full, and then the movements of the diaphragm and inferior sides are very perceptible, while the stomach remains still and tranquil in the midst of these motions, and is unmoved, except in so far as it is drawn up by the œsophagus. Nevertheless as this organ empties itself, its sides close together so as always to embrace closely the substances which it contains. But this closing together of the sides is not accomplished by apparent contractions like the action of the bladder and uterus, but by gradual and insensible contractions, by which wrinkles are formed upon the internal surface of the stomach, exactly proportioned in size, to the greater or less fulness of this organ.

2d. The only proper movements of the stomach are circular contractions successively performed, from the distance of about two inches of the pylorus to this orifice. These contractions are repeated in the same way a great number of times, but that does not even coincide with vomiting. A similar contraction is sometimes observed, which is bounded by the middle part of the stomach.

These are the principal details of some experiments made upon this subject.

We took away the stomach from a dog, and supplied its place by a bladder attached to a wooden tube, upon which we tied, at the other part, the gastric orifice of the œsophagus. Having left the abdomen open, we injected several times tartar emetic into the crural vein. The animal made some efforts to vomit, during which the artificial stomach discovered some slight jerking move-

ments, similar to those observed in the natural organ ; but there was no vomiting, and the animal died after the injection of twelve grains.

In another experiment we adapted an artificial stomach, filled with coloured water, in the place of the natural one, left the belly open, and injected tartar emetic into the crural vein. The animal when stretched upon his back, made many ineffectual efforts to vomit ; he was then left to himself, and sometimes lying upon his belly, and at others, upon his sides, and after changing his position in many different ways, he vomited frequently, and raised an abundance of the water which was contained in the artificial stomach, which proves beyond a doubt, that the first part of vomiting, that is, the passage of the water from the stomach into the œsophagus, can take place independent of the action of the stomach.

In the experiments which we have just been making, and in others which we have performed at other times, and for different purposes, we have observed that animals voided their urine, after the abdomen was opened, and the bladder entirely freed from every kind of pressure, and we have seen fecal matters also expelled under the same circumstances, and even parturition take place in animals where the uterus was small and membranous ; but we have never known vomiting to occur, in this manner, altogether independent of the action of the diaphragm, abdominal parietes ; and particularly of the sides or œsophagus.

It appears from the above experiments, that vomiting may be divided into two periods, the first consisting in the passage of matters from the stomach to the œsophagus, and the other from the œsophagus through the mouth.

That the stomach does not present any manifest contraction to which we can attribute the first period. The fibrous and partial contracting which we remark in it, besides that they are not synchronous with the efforts of vomiting, do not seem to be proper to produce this effect. They are nothing more than the natural motions by which the stomach empties itself in the process of digestion, and which equally occur after as before vomiting.

That the first period can never be effected without external pressure, and that the number and intensity of the forces vary very much, according to the consistency of the substances to be vomited ; so that we cannot positively affirm, that the contraction

of the diaphragm, or abdominal muscles, are absolutely necessary to the fulfilment of this function, since we have seen, that the mere approaching of the sides towards the epigastric region, is sufficient when the substances are of a fluid consistence.

That the second period of vomiting, or the ejection of matters through the œsophagus takes place without the assistance of external pressure.

That independently of this action of the œsophagus, this canal appears to assist, to a certain degree, in the fulfilment of the first period. This is effected by sympathy ; the matters, when they reach the œsophagus, causing contractions of the stomach by the irritation which they produce. Thus it is well known that tickling the fauces is one of the best methods of producing efforts to vomit.

Perhaps we ought to attribute to this action of the œsophagus in vomiting, the slowness with which the efforts of vomiting come on, and their feebleness, when it is removed from the stomach, and also the imperfect manner in which vomiting is performed, when it is effected by the simple contractions of the abdomen alone, however strong they may be, if unassisted by the energy of the œsophagus which is one of the principal means of determination to this act.

That the diaphragm receives from the phrenic nerves, the principle of its motions, and that when these nerves are divided, it is suddenly and entirely paralyzed ; but it is extremely difficult to perform this section in the neck, and therefore, as often as we perform it in an experiment, we should afterwards make a careful examination to see if it has been perfectly done. We have now finished the duty imposed upon us ; for after what we have said in the beginning, it is unnecessary to compare the results we have obtained with those laid before the society by Mr. Maingault.

REVIEW.

Experiments on the Principle of Life, and particularly on the Principle of the Motions of the Heart, and on the Seat of this Principle: including the Report made to the first class of the Institute, upon the Experiments relative to the Motions of the Heart. By M. Le Gallois, M. D. P. Adjunct Member of the Society of the Professors of the Faculty of Medicine of Paris, Member of the Philomatic Society, Physician to the Board of Benevolence of the Pantheon-ward; translated by N. C. and J. G. Nancrede, M. D.—M. Thomas, Philadelphia 1813.

IN the first volume of this Journal, (p. 203) we gave a notice of the labours of M. Le Gallois. After receiving the work now under review in the original, we prepared a statement which exhibited, as fully as our limits would permit, a view of its most important contents. This was published in the first number of the present volume, (p. 11.) Just after this publication, the translation recently made at Philadelphia came into our possession. If we felt a pride in seeing this important work first translated into English in our own country, this pride was increased by noticing that the translators were natives of this place. These gentlemen may be considered as peculiarly well qualified for their task. Though born in this country they are of French extraction, being sons of a gentleman formerly well known here as an instructor of the French language in our University. In addition, it appears that "it was the good fortune of the translators, while studying medicine in France, to be honoured with the acquaintance and friendship of the author, and to be present at and assist in the experiments which led to and determined his discovery."

We have been the more particular in speaking of these young gentlemen, because it seems to be their intention to continue to give us whatever else may come from the same source,* and because also, they must be qualified to translate some of the

* See their preface.

other important and valuable medical works which are to be found in the French language, and the diffusion of which, in this country, would be highly useful. Though we will not say that the translation of M. Le Gallois' work is without imperfections, yet certainly it is in general very well executed, and its few errors are of a kind which experience will correct.

After the statements in this Journal to which we have already referred respecting the labours of M. Le Gallois, a general description of the work is unnecessary. We only beg the reader to turn to those statements before he proceeds with us to an examination of some of the doctrines which the author has brought forward. We shall have occasion to state that we do not coincide with the learned and ingenious experimenter in all the deductions he has made; yet we think his labours have done much to elucidate some most important and some of the most intricate questions in physiology, while his industry and as we trust his fidelity entitle him to our warmest thanks.

Though M. Le Gallois was led into the field of experiment by accident, and for very limited purposes, yet ultimately his object was to ascertain the *seat* of the principle of life. We cannot proceed to examine his experiments until we have made a few remarks in relation to this object. First, He takes for granted the *unity* of the vital principle. If he is not correct in this point, it will very much influence the results to be drawn from his experiments. What is meant by the vital principle? Is not the word principle used here in a sense analogous to that affixed to it in the phrases, *the principle of gravitation, the principle of electricity, of magnetism, &c.* Is it not used in reference to a power which we know only by its effects? Do we know any thing of the power, or powers peculiar to living beings, except by their effects? The composition of living bodies, their structure and their functions are subjects of observation and experiment. It is from these, and from these only, that can be determined what are the powers possessed by these bodies. Proceeding analytically we learn from the examination of the composition, structure, and functions of living bodies, that they possess various powers, some common to all or many parts, others peculiar to certain parts. Of these powers we find, that some are the same which are possessed by inanimate substances, others are found only in living bodies. These last may be called powers or prop-

erties of vitality, or more exactly *properties found only in living beings*. We are not authorized to believe that all these properties are derived from a single principle, unless this can be ascertained by pursuing the analysis, or unless it can be shown sympathetically that a single principle will explain all the phenomena. Neither of these have ever been done. The common hypotheses on the subject may be divided into two kinds. Of one kind are those which suppose this principle to be in some mysterious way diffused through the body, or over various parts of it. The hypotheses of the other kind place this principle in a particular *seat*, in a particular organ, or set of organs; as in the brain and its appendages. Those who maintain hypotheses of the latter description, suppose that the organ, possessing the vital principle, produces the phenomena of life in other organs by some exercise of its own functions on them, either mediately or immediately; as in a machine, if motion can be introduced by any power, this may be communicated from part to part, so as to operate a great variety of effects. However plausible such opinions may appear at first sight, none of them hitherto have born scrutiny. When the phenomena have been carefully examined, they have not comported with those which ought to be produced by the principle assumed, or they have been more than it could produce. The evidence adduced in favour of such hypotheses, has too often been of the same kind as that brought forward by M. Le Gallois. Evidence has been brought to show that life could not be maintained without the agency of a certain principle, or without the influence of a certain organ. Hence it has been inferred that this principle must be the principle of vitality, or that this organ must be the seat of such a principle. Now this subject cannot be successfully investigated until one distinction, not indeed a new one, is constantly kept in view. The distinction is between the powers, or properties peculiar to living beings, and the functions whose constant exercise is most immediately necessary to the maintenance of life. It has long been known that death may be produced suddenly in man and other animals of the same class, in three ways, viz: by the cessation of the action of the heart, by the stoppage of the functions of the lungs, and by certain interruptions of the influence of the brain on the other organs. But this does not prove that the principle of life is seated exclusively in either of these three great organs, the brain, lungs;

or heart. The influence of their functions in the maintenance of life rests on totally different grounds.

All living beings in an active state,—for we except those who are dormant, as also seeds and eggs,—exercise functions of the following descriptions, and the exercise of these is necessary to the maintenance of their vitality, although it is not necessary that these functions should be in unremitted exercise. They are, first, the functions by which they take in foreign substances for their nutriment; second, the functions by which they assimilate these to themselves, forming a fluid fitted to supply the waste and the increase of their various parts; third, the functions by which this fluid is moved from part to part, and by which all internal motions are performed; fourth, the functions by which the assimilated fluid is converted to the various solid and fluid parts of the living being, or the functions of nutrition and secretion; fifth, the functions by which useless parts are separated and ejected from the body; sixth, the functions by which the being produces its offspring.

These are the functions which may properly be considered as essential to living beings; and they may all be exercised without the agency of any single great organ, such as is called *vital*. This we know, because they are all exercised in beings destitute of such organs. It is true that in animals provided with a heart the almost uninterrupted agency of that organ is at all times necessary to maintain the functions we have described above. But this does not show that the heart is the peculiar seat of the vital principle. The functions of the heart are mechanical,* and so are the functions of the great arteries. These organs serve only to distribute the common fluid to the various parts, in which it is employed for the purposes of nutrition and secretion; but the power of the various parts exist independently of the heart, just as in animals and plants which are destitute of such an organ. So necessary, however, is the agency of the heart to the other parts, that if this agency be interrupted life is quickly destroyed; and hence this organ is said to perform a vital function. It is, we think, equally easy to explain the necessity of respiration to the maintenance of life, without admitting that the principle of life has its seat peculiarly in the lungs. In plants and in many

* Let it be noticed, that when we call these functions mechanical, we do not mean that they are performed by mechanical powers.

animals, that function is performed by various organs existing independently of each other; but in man and similar animals it is not so; and in them it is possible to arrest life at once by interrupting respiration. This only shows that the function of respiration is necessary to such beings, in common with many other functions.

The brain also is ranked among the vital organs, or organs performing vital functions. In what way its agency is thus important, has not always been distinctly seen; and for this reason, perhaps, physiologists have been prone to believe that this organ is the peculiar seat of the vital principle. To determine the influence of the brain in the maintenance of life has been more difficult, because it has been found that this organ may be greatly injured, and some of its great functions interrupted or suspended, without destroying vitality; while in some cases slight injuries have occasioned instant death. Now by what relation of that organ to the other parts of the system this happens has not long been well understood. Not to be too diffuse, let it suffice to state, that when M. Le Gallois took up this subject, it was known that the immediate influence of the brain in the maintenance of life arises from its relation to the muscles of respiration. That these muscles are under the influence of volition is known to all. Yet ordinarily we are not conscious of any volition in respect to the exercise of them, and their actions are continued during sleep. Hence when the muscles have been distinguished into voluntary and involuntary, these have been said to be of a mixed character. But it is found that when the head is removed from the body, or when the spinal marrow is divided just as it issues from the cranium these muscles are paralyzed; and it is from this paralysis that death then insues. The office of these muscles has been supplied by inflation of the lungs, and Bichat found that thus he could maintain life in the trunk and limbs for a considerable period. It is then evident that while the brain, like the heart and lungs, exercises a function essential to the maintenance of life in man and similar animals, yet that this organ is not the seat of the principle of life.

Of the nature of the relations between the great organs and the more ignoble parts, we shall have occasion to say more hereafter. At present we feel authorized to infer that vitality is not dependent on a principle which has any peculiar seat; and to

deny that there is any evidence in favour of the unity of the vital principle.

Let us now inquire briefly what facts our author has established by his experiments, and what inferences he has made from them. In our statement we shall not confine ourselves precisely to the order observed by him.

First, he has shewn that the influence of the brain on the muscles of respiration is not possessed by the brain as a whole ; that even a great part of that organ may be removed in successive slices without interrupting respiration ; and that this effect is produced only when, reaching the medulla oblongata, that part of it is removed in which originates the eighth pair of nerves or the *par vagum*. When this part of the encephalon is removed, instantly the muscles of respiration are paralyzed. Whence does this happen ? Those muscles do not receive branches from this nerve nor from the medulla oblongata ; they are furnished by nerves which proceed almost directly from the medulla spinalis. This difficulty our author has not, that we recollect, attempted to resolve, although it is a much greater difficulty upon his system, than upon that commonly received. He does not seem to have noticed it. We shall have occasion to refer to it again, and shall then offer our own explanation of it.

The functions which are suspended by the injury above described, those of the respiratory muscles, are necessary only to the mechanical part of the process of respiration. If this be supplied by a mechanical inflation of the lungs, death does not ensue. Life is continued in both the head and trunk, if the medulla spinalis only is divided ; in the trunk only, if the head be separated from the trunk. The principal evidence of the continuance of life in these cases is the continuance of the circulation, and that of motion in the muscles.

But what says our author ? Since vitality may be continued in the trunk and limbs when separated from the head, he says that it is evident that the principle of the life of the trunk is not resident in the brain. Very good ; we agree, and believe that all good physiologists have long agreed in this opinion. But, says he, though this principle does not reside in the brain, it does reside in the spinal marrow, and it is maintained by the action of the arterial blood on the spinal marrow. It is thus he tells us, that the heart and the medulla spinalis are mutually subservient

to the maintenance of life. The heart, in common with the rest of the trunk, receives the principle of life from the m. spinalis ; while the heart returns the obligation by keeping alive this principle by its arterial blood.

Let us see how all this is shown.

First, we are told that sensation and voluntary motion are the criteria of life.* This then is to show that vegetables are destitute of life ; and that man, when affected with complete apoplexy, is destitute of life ; and that all parts completely paralyzed in man are destitute of life. Surely this is not so. The abolition of sense and voluntary motion does not imply the abolition of all the functions ; nor can we by the powers producing these, by sensibility and the power of volition over the muscles, explain all the phenomena of life without the aid of any other vital powers.

Second, we are told, in respect to the trunk and limbs, that sensation and voluntary motion are maintained in every part so long as the integrity of the corresponding portion of medulla spinalis is maintained ; but that if the circulation is arrested in that portion of the medulla, or if the same be destroyed by violence then death ensues in the parts, to which nerves are sent from that portion of the medulla. Now we agree that life is maintained in the trunk and limbs, as he states, though not in perfection. It is maintained, for the circulation and the power of motion continue in them, and some other evidences of life.

The experiments of M. Le Gallois seem to show that sensation and *voluntary* motion, though no doubt in a very imperfect degree, also continue to be exercised by these parts ; for as he says the decapitated animals stand on their limbs and balance themselves, they flinch and move their limbs when pinched, and they endeavour to apply their paws to the wounded stump after decapitation. Yet certainly in the human subject we find that injuries of the spinal marrow, such as leave the lumbar portion of it entire, but separated from the superior part, are followed by an entire abolition of sensation and voluntary motion in the lower extremities and in the lower part of the trunk. But that all the vital powers are maintained by the influence of the spinal marrow on these parts is not yet proved. In some of M. Le Gallois' own

* We cannot avoid asking M. Le Gallois whether he discovers the vitality of the heart in these cases by its sensibility, or by its voluntary motion.

experiments, it appears that the circulation is continued in the lower extremities, after the destruction of the lumbar portion of the medulla.

Third, we are told, in opposition to the doctrine of Haller and his school, that the heart *derives its power of motion* from the nervous system. It is not from the brain, says our author, that the heart derives this power, though from that it receives some of its nerves. He contends that this power is derived from the spinal marrow. Yet he acknowledges a great difference between the influence which the spinal marrow exercises over the heart, and that which it exercises over the muscles of the limbs. In respect to the latter, the destruction of a particular part of the spinal marrow will instantly occasion a perfect paralysis. In respect to the heart, there is not any particular part of the spinal marrow, the destruction of which occasions a loss of power in that organ. The effect produced on the heart by the injury of the spinal marrow depends very much on the circumstances of that injury.

If the whole spinal marrow be suddenly destroyed, by thrusting an iron probe through the whole length of the vertebral canal, the actions of the heart cease at once. If however only a portion, say even the whole dorsal portion, of the medulla be destroyed, the heart is not necessarily arrested in its motions, though they become weaker; and by management, any portion of the medulla may be destroyed, without stopping the action of the heart. Nay, if the integrity of the thorax and of the heart be preserved, it is possible so to conduct an experiment, as to remove in succession not only the head and posterior extremities, but even the lumbar portion of the vertebræ and the abdominal viscera; and yet by continuing inflation of the lungs to maintain life in this remnant of the body during a considerable period.

Thus then it appears that the influence of the nervous system on the heart is very different from that which the same system exercises on the muscles called voluntary. Is not this difference greater than M. Le Gallois estimates it; and not only so, is not the relation between the *medulla spinnalis* and heart *dis-similar in kind* from that existing between the same *medulla*, and the voluntary muscles? As this is a question involving principles which we think of the highest importance, we shall consider it at some length.

We apprehend that the relations existing between distant parts may be divided into two classes. Those of one class may be considered as mechanical, they being evidently maintained by the motion of matter. The motion is, it is true, produced by vital powers, and in some instances the matter is endowed with vital properties. But we call this relation mechanical, because the means of maintaining it are matter and motion. Of this class is the relation of the stomach to the bowels, that of absorbent to the sanguiferous system, that of the heart to the blood-vessels, that of the kidneys to the urinary bladder. The relations of the other class are those in which an impression made on one part, occasions effects on a distant part, without any evident motion. As motion has never been shown to occur in the maintenance of these relations, and as it is not easy even to conceive how it can take place, we are authorised to doubt its occurrence. We cannot however doubt that a continuity of particular organs is necessary to the maintenance of these relations, and this in some cases has been proved. So far as we know, these organs are endowed with peculiar powers, whereby they communicate impressions from one part to another. The relations of this class may be divided into two orders. Those of the first order are the relations by which the mind maintains an intercourse with the bodily organs through the medium of the brain. They are the relations by which we become informed of the impressions made on various parts of the body; and in this case the relation is maintained by the nerves, and that in consequence of their property called sensibility. They are those likewise by which the mind influences the voluntary muscles; and here likewise the nerves are the organs of communication, and that in consequence of a vital power or property in those organs, which has never yet received a name.

The relations of the second order of this class, are maintained by a property called *Sympathy*, and that certainly in many cases, and probably in all, through the medium of the nervous system. This power or property is certainly very distinct from sensibility and from irritability. The most obvious case in which this power is exercised is when a sensation exists in one part, in consequence of an impression made on another. But sensation does not always follow the exercise of this power. For we refer it to the same power that impressions made on one part cause actions either to take place, or to cease in another part. Here the impres-

sion communicated influences the irritability, but the power by which it is communicated is probably the same as where the sensibility is affected in the part sympathizing.

As familiar instances of actions taking place in one part in consequence of impressions made on another, we may mention that an irritation of the nostrils will excite sneezing, and an irritation of the fauces will excite vomiting. In the urinary organs there are frequent instances of sympathy of this kind. The salivary glands and the mouth present instances of the different kinds of relations. The glands maintain a mechanical relation to the mouth by the transmission of their secreted fluid. A stimulus applied to the mouth occasions the glands to increase their secretions and to transmit the same to the mouth. Here the relation is sympathetic, and it is exercised without any sensation in the glands. The action performed by these organs is considered an evidence of the transmission of the irritation. We have similar instances in the relation between the testes and urethra and in many analogous cases. By sympathy the heart and the brain are influenced by the state and actions of the stomach and vice versa. By this relation not only the functions but the powers of different parts are constantly varied. Affections of the mind, and so also affections of the stomach, occasion sudden and great changes in the functions of all the other parts and also in their powers; suddenly depressing, or suddenly elevating them in a degree not to be overlooked in many cases. This is so true that the powers necessary to the maintenance of the vital functions may be suddenly and instantly destroyed by severe affections of the mind, and by blows on the pit of the stomach. We know not how circumstances of this sort can be explained but by reference to this property of sympathy, peculiar to living bodies, and so abundantly exemplified in both the ordinary and the extraordinary phenomena to be noticed in them.

Let any one who has duly considered this kind of relation read over the experiments of Le Gallois upon the spinal marrow, and he will find them explicable upon the principles we have now been stating. According to our division the relations between the medulla spinalis and the voluntary muscles are of the first order of the second class; while those between the same médulla and the heart are of the second order of the same class. Let the spinal marrow be suddenly and rudely injured to a certain extent

and life ceases ; the heart is affected by sympathy, its functions are suddenly arrested, or greatly enfeebled ; the blood is not sent to the extreme vessels ; probably they also partake the shock, and are equally disqualified with the heart from performing their functions even if the blood should reach them, and thus is life terminated. Let the same injury be inflicted gradually, on successive portions, but finally to as great an extent as before, or even greater, and the functions are not interrupted in the same manner ; the heart continues to beat and the circulation is maintained. The injury being less sudden and less violent, the effects on the sympathizing parts are less severe. Such are the results of our author's experiments. Do these accord with the effects produced by similar injuries inflicted on the nerves of sense, or on those which go to the voluntary muscles ? If the optic nerve be divided from the brain, or destroyed at its origin, will any *modification of the injury* allow the sense of vision to be preserved ? Did Mr. Le Gallois himself find that by any management he could destroy the medulla spinalis, or any part of it, in such a way as to allow the muscles of the limbs, deriving their nerves from such part, still to be influenced by the spinal marrow ?

But this author tells us that his experiments prove that the heart is influenced by the spinal marrow just as the muscles of the limbs are, with only this difference that the heart is influenced not from any one point, but from the whole of that marrow. This influence we acknowledge. But we say that it is totally different in kind from the other, that the heart is influenced by the whole spinal marrow, because its relation to that part is sympathetic ; and that, above all, this influence does not consist in the communication of the principle of life from the medulla spinalis to the heart. In short it does not at all militate with Haller's doctrine of irritability, as it is called ; or with the doctrine that there resides in the muscles themselves a power of motion and a power of being excited by external agents to the performance of motion, independent of the agency or influence of the nervous system.

To investigate this point further, it does not seem to us necessary to subject any more animals to torture. Nature has prepared for us living beings without hearts and with hearts, without heads and with heads, and even without any the slight-

est appearance of nerves. So far as a living being, destitute of nerves, possesses organs analogous to some of those in other beings which are possessed of nerves, and while these organs perform in each similar functions, we are authorized by the soundest principles of logic* to believe that in the living beings of both descriptions these organs are possessed of the same vital powers, or properties. We will not deny the possibility of an exception to this general proposition, but we are authorized to say that an exception should not be admitted except from the most plenary evidence; it should not be admitted except the evidence could not be explained in any way consistently with the general principle.

Let us apply all this to the question whether the muscular power exists in the moving parts independently of nervous influence. To solve this question it seems only necessary to inquire whether such a power is found in beings destitute of nerves. Now this inquiry is answered at once; for motion is performed in all living beings, yet nerves are not found in them all. Not to speak of those animals in which nerves cannot be discovered, in vegetables there certainly is not any evidence of the existence of such organs. Yet motion is performed in vegetables as well as in animals. The former have not indeed any parts destined to the performance of locomotion, nor have all the latter. But in all, of both kingdoms, fluids are moved from part to part by the agency of the solids, when stimulated by the fluids and contracting on them; and in certain functions we have every reason to believe that there exists the utmost analogy in them all; these are the functions of absorption, of nutrition and of secretion. In all, these functions are performed by the agency of very minute vessels upon the fluids they contain, and one part of the process is the exercise of motion upon those fluids. Now who can doubt that the power, by which those vessels move, is of the same kind in all those beings; the same in those possessed of nerves and in those destitute of such organs?

But if the power of motion exists in any case without nervous influence it is most philosophical to believe that it exists the same in all cases, in which the organs of living beings possess this power. The exercise of the power may be variously influ-

* See Stewart's *Philosophy of the human mind*, vol. 2, chap. 4, Sec. 4.

enced in different beings, but the power must, we think, be of the same kind in all parts possessing it.

Is this disproved by what we know of the exercise of muscular power in the more complicated animals? The influence of the nerves on the voluntary muscles is not thought to disprove the doctrine even by Mr. Le Gallois. Certainly their influence in this case is not such as to demonstrate that the power of motion is communicated from them to the muscles. The phenomena admit a perfect explanation without this supposition. But our author, like many others, conceives the doctrine disproved by finding the involuntary muscles furnished with nerves; and more especially, when he finds the exercise of the power of motion in the *involuntary* muscles arrested by injuries of the nervous system.—To these points we shall now advert.

Since there is so much reason to believe from the considerations which we have been stating, that the muscles possess a power of motion independent of the nervous system, we are not ready to admit that the contrary is proved by the circumstance that the involuntary muscles in complicated animals are supplied with nerves. If another office can be assigned to these nerves, in accordance with the phenomena noticed, we shall believe that such is their office. Now we think there is great reason to believe, that nerves are supplied to the involuntary muscles as organs of communication, or of sympathy with the other various parts of the body; for which purpose, they are necessarily interposed between the great organs, and between each of these and other parts to which they are subservient. In living beings of the most simple structure, where each part has in immediate connection with itself the different organs necessary for the maintenance of its regular processes, where there is almost a continuation of the structure through the absorbent, assimilating and secreting vessels, there is not any necessity for such organs of communication. In such beings they are not found. But when we come to more complicated beings, to such as have various members and a stomach performing the preparation of the nutriment for the whole, or a heart, without whose agency the fluid destined for the nutriment of the whole cannot be distributed, or other similar organs, then it becomes necessary to have means of communication between these great organs and the other various parts of the system. The heart beats and the stomach

produces its changes on the aliment introduced into it, not merely in consequence of the stimuli applied to them. At least they are kept in a state to perform these functions by the influence, the sympathetic influence, of the various parts of the system, whose purposes they subserve. Of this the evidence is not very strong when the whole system is in perfect health; but it becomes obvious at once in case of any considerable local derangement. There are occurring to clinical physicians hourly, and can hardly escape common observation, instances of such affections of the great organs. This sympathetic communication is, in some cases, actually requisite to keep up the ordinary intercourse between different organs belonging to the same apparatus, without which their functions would not be performed. Of this our author gives us an excellent example, to which we have before referred, and shews the agency of the nervous system in this case, though he does not construe the facts as we do. This example respects the separation of the brain from the spinal marrow. It appears, from his statement, that if the division be made below the medulla oblongata, respiration ceases; if above that, or above the origin of the *par vagum*, then respiration is maintained. He infers that the principle of respiration exists in the medulla oblongata. He is certainly correct in the belief that that part is interested in some function essential to respiration in the animals on which his experiments were made, and doubtless in others of the same class. But, if we pursue the analysis a little further, we shall find this case to support the opinion we have advanced. We find that the muscles of respiration derive their nerves from the spinal marrow, but that the lungs receive branches from the eighth pair of cerebral nerves, the *par vagum*. The muscles of respiration are excited to action, not by a stimulus applied to themselves, but by a stimulus existing in the lungs; by a necessity existing in those organs of a change of air, which they can obtain only through the agency of the muscles of respiration. The respiratory muscles are then induced to act by the influence of the lungs. But between these muscles and the lungs, there is not any medium of communication except the nervous system. It is, we say, through the *par vagum* that the communication is made to a part of the cerebral system, which part is central in respect to that nerve, and the nerves serving the muscles of respiration. De-

stroy the connection between the *par vagum* and those nerves, and immediately all efforts of those muscles cease. But this happens, in M. Le Gallois' experiment to the muscles of the trunk, but not to those of the head.* This follows on our principles. The influence of the lungs, arising from their wants, is conveyed to the medulla oblongata, and produces its usual effects on the nerves of the head which serve muscles that aid the respiratory processes. The influence reaches those muscles because their nerves are still connected with the *medulla oblongata*, in which the deficiency of respiration is, if we may say so, recognized. Hence we find those muscles making all the efforts which are usual in cases where respiration is interrupted. This is shown in the stretching open the mouth as if endeavouring to draw in a large portion of air; an effort which is of no avail, since the thoracic muscles and the diaphragm do not perform corresponding motions. These muscles are not excited to motion, because the continuity of the communicating, or sympathizing organs is destroyed.

All this accords essentially with the opinions which we have long entertained on the subject of respiration; but in support of which we consider Mr. Le Gallois as having furnished very strong confirmation by his accurate and elegant experiments. He has shown precisely the point where the sympathy is exercised, or where the communication is made between the nerves concerned in the process. From knowing this we seem to derive something like an explanation of the well known circumstance that the muscles of respiration are of a mixed character as regards their subjection to the will; being at all times subject to its control, and yet being ordinarily exercised without its immediate influence. In the human subject at least, however it may be in other animals, we believe that the commands of the will must issue from that portion of the nervous system which exists within the cranium; and here we find this communicating point placed just within that boundary, in the *medulla oblongata*, a part intermediate in its situation between the brain and the *medulla spinalis*. Is it too much to say from these circumstances that the *medulla oblongata* is placed just on the borders of that organ in which the power of volition is exercised?

* We refer to the case where the spinal marrow is divided, as it issues from the cranium.

Let us quote from our author one other instance of sympathy interrupted. If a considerable portion of the medulla spinalis be suddenly destroyed by an iron probe the powers of the heart are greatly affected. They are diminished and sometimes suddenly suspended. But if the circulation be stopped in that part of the medulla by tying the vessels which supply it, the life of the medulla is destroyed in a short time, but in a much more gentle way. The effect on the heart in this case is much less ; and after this that part of the medulla may be torn by the iron probe without affecting the heart, for the heart will not sympathize with a dead part. These facts, derived from Mr. Le Gallois, seem to support our doctrine much more than they do his.

The circumstances which have been stated satisfy our own minds that the use of the nerves, which are sent to the *involuntary* muscles, is not to supply those muscles with the power whereby they move, but to maintain, between those organs and the parts which they subserve, an intercourse whereby affections of the one may be communicated to the other. The heart influences the extreme vessels by transmitting to them the fluid on which they act ; they on the other hand influence the heart and vary its actions, according to their own state and circumstances, through the medium of the nerves. But this is done without occasioning sensation and without being recognized by the mind, and it is known only by its effects. The supply of nerves then to the heart does not disprove the doctrine of irritability ; and we think that it has been shown that Mr. Le Gallois' experiments do not disprove that doctrine.

But enough ;—we did not intend to occupy so many pages in stating wherein we cannot coincide in the conclusions adopted by Mr. Le Gallois. Assent may be expressed in a few words ; but it is hardly decorous to state a difference of opinion from a man of respectability without giving the reasons for that difference in some detail. There are some minor points in which we forbear to express our dissent from the French physiologist. Let us rather occupy the room which is left for us in stating what service he has rendered to science.

I. The general tendency of Mr. Le Gallois' labours is to determine, with more precision than had been done previously, the relations existing between the great organs of animal bodies, particularly between those which are principally concerned in

the animal and those concerned in the organic functions. Though we do not agree that he has proved that the one system derives its powers from the other, yet he has shown how, or under what limitations the functions of the one are necessary to the maintenance of the functions of the other. He has also shown that the extent of some of these relations is varied in animals of different species and of different ages. Hence though his results must be admitted in respect to quadrupeds generally, they must not be received as giving precise estimates of the relations in question in our own species.

2. He has confirmed that the immediate agency of the brain in maintaining the vital functions is exercised upon the muscles of respiration ; and he has detailed, with more precision than his predecessors had done, the consequences of separating the head from the trunk and of dividing the encephalon from the spinal marrow. He has shown that the influence of the nervous system upon the muscles of respiration is not exercised by the whole brain, but by a particular part of it ; and thus has explained why decapitation fails to produce paralysis of the respiratory muscles in some animals, viz. in those whose structure easily permits the head to be removed while the *medulla oblongata* is left attached to the *medulla spinalis*.

3. He has thrown some light on the influence of the *par vagum* upon the circulation in the lungs, upon the action of the heart, and upon the functions of the stomach. We say *some* light, because we think this subject requires further elucidation, that we may not believe either too little, or too much.

4. He has in a very satisfactory manner and with great accuracy analyzed the effects of a division of the *recurrents* ; a subject which has been half investigated from the days of Galen. We now readily see the utility of the connection of these nerves with the *par vagum*.

5. Although we do not agree with Mr. Le Gallois in his opinions respecting the peculiar properties of the spinal marrow, yet we think his experiments have shown us, much better than was known before, the nature and extent of the relations between this part and other parts of the body ; and especially he has demonstrated that although the brain acts through the *medulla spinalis*, this latter portion of the animal system does not derive

its vital powers from the brain. We have no doubt that conclusions of the same kind may be extended to the nerves.

6. Our author has shown the great extent to which parts may be removed without the immediate destruction of life ; and the length of time, to which life may be protracted in animal bodies under various mutilations both of the more noble and of the ignoble parts.

INTELLIGENCE.

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Medical Lectures.

THE winter course of Lectures in the Medical Institution of Harvard University, will commence in Boston, as usual, on the first Wednesday in November, and continue daily three months from that time.

The principal requisites for obtaining a Medical Degree in this Institution, are an attendance on two Courses of each of the Lectures; a proper knowledge of the Latin language and natural philosophy; the expiration of three years from the period of commencing study to that of graduation, two of which are to be past with some medical practitioner; and finally, undergoing an examination, &c. The fees for attending the three courses for one season, amount to fifty dollars.

Medical Graduates in Harvard University.

The public examination for the degree of Doctor of Medicine was held in the Philosophy Chamber, in Cambridge, on Friday 25th August; when those gentlemen, who had been previously approbated at a private examination, read and defended their dissertations, in an ingenious and honourable manner. The following are the names of the graduates with their places of residence and the titles of their dissertations:—

John Cotton, A. M. of Framingham, in the county of Middlesex, "*On the Vital Powers of Organic Life.*"

Amos A. Evans, of the state of Maryland, "*On Malignant Ulcer, or Hospital Gangrene.*"

Joseph Eaton, A. M. of Salem, county of Essex, "*On Phthisis Pulmonalis.*"

Nathaniel Lovell, A. M. of Boston, "*On Dropsy.*"

Lafayette Perkins, of Boston, "*On some of the Experiments on the Principle of Life, [and particularly on the Principle of the Motions of the Heart, and on the Seat of that Principle,] which were performed by Dr. Le Gallois.*"

Sturgis Phinney, of Barnstable, county of Barnstable, "*On Simple Dysentery.*"

William Perry, A. M. of Exeter, in the state of New Hampshire, "*On the Action of the Arteries in the Circulation of the Blood.*"

Joseph L. Stephens, A. M. of Salem, county of Essex, "*On Cynache Trachealis.*"

Joseph Wheelwright, A. M. of Newburyport, county of Essex, "*On Hypochondriasis.*"*

As the graduates have not printed their dissertations, we shall not speak particularly of their merits. Some of them exhibited marks of great reflection and research, and all contained proofs of a satisfactory accomplishment in medical learning.

Artificial Cold.

It appeared by our analysis for 1811, that Mr. Leslie of Edinburgh was able to congeal water in every season of the year by accelerating evaporation in a vacuum, and by the presence of a very absorbent body. This philosopher has since constructed an apparatus which has been shewn to the class by Mr. Pictet, his correspondent, by means of which water is congealed at pleasure and instantaneously, and again rendered liquid. For this purpose water is placed under the receiver of an air pump, in a vessel, the cover of which can be raised or lowered, by means of a handle which passes across the top of the receiver; when the water is uncovered, yielding to the action of the causes that evaporate it, it freezes, and when it is again covered, the surrounding heat in a short time restores it to its former state. Our associate, Mr. Gay Lussac, who has repeated before the class the experiment of Mr. Leslie, has recalled a known fact of the same kind; it is the cold that is produced in certain machines from which condensed air is suffered to escape. He has proved, that to produce ice in every season it is only necessary that air should be condensed to half its original bulk; and he thinks, that it would be easy to procure it in hot countries, by the condensation of air by the means of a fall of water. By

* Two other Candidates, who had honourably passed the private examination, were prevented from attending and obtaining their degree.

employing bodies which are more easily evaporated than water, a degree of cold truly astonishing may be obtained, by which not only quick silver can be frozen, but also the purest spirit of wine. Mr. Hutton, of Edinburgh, who performed this, has remarked on the occasion, that in the highest rectified alcohol, congelation still separates materials very dissimilar. Mr. Configliachi, Professor at Pavia, has frozen mercury by the evaporation of water alone. We owe the first communication of these experiments to Mr. Pictet.

Effect of Pressure of the Air on Crystallization.

It was formerly thought, that the pressure of the air, the influence of which is so powerful in retarding the evaporation of fluids, retarded also the solution of salts, or what is the same thing, accelerated their crystallization when they were dissolved; and it is certain, that a saturated solution of Glaubers' salts or sulphate of soda, which preserves its fluidity when it is cooled in a vacuum, crystallizes as soon as air is admitted to it; but Mr. Gay Lussac is convinced, that with regard to salts in general, and even the sulphate of soda, this phenomenon is not owing to the cause that has been assigned. When the contact of the air is intercepted, by a layer of oil, for example, the crystallization is retarded the same as when pressure is removed in a vacuum, while, on the other hand, a column of mercury does not, in the least degree, accelerate this crystallization. A solution which is made of mercury, from which the air has been driven by ebullition, does not crystallize, but if it is made of common mercury, it soon crystallizes. The agitation of the fluid, the introduction of a small crystal and many other causes produce crystallization, whatever may be the pressure. Mr. Gay Lussac therefore concludes, that it is not by its pressure that the air diminishes the solvent power of water; and he is convinced also, that it is not by the absorption of air that water loses this power; but he considers it as a phenomenon more or less analogous to that of common water, which, as we know, remains fluid when it is some degrees below the freezing point, so long as it is not agitated, but which congeals as soon as it receives the slightest jar.

On the Heat of Prismatic Rays.

The most evident source of heat, on the globe, consists in the rays of the sun ; but it was long since remarked, that the rays divided by the prism do not give an equal degree of heat, and Dr. Herschel, the celebrated astronomer, has some years since shown that their heating power increases from the violet to the red ; he states also, that beyond the spectrum, he finds rays, which, without being luminous, possess a heating power stronger than that of the red rays. Messrs. Ritter, Boeckman, and Wollaston stated, a short time after, that the power of the luminous rays to produce chemical changes, is in an inverse order and resides especially in the violet ray and beyond it. Mr. Berard, a young chemist, of Montpellier, who has repeated these two kinds of experiments with much delicacy and precision, has proved their accuracy in many respects ; he has also discovered, that the chemical power of light diminishes as it approaches the middle of the spectrum and disappears beyond it. But according to him it is in the extremity of the red ray, that the maximum of the heating power resides, and that it diminishes beyond the spectrum. Mr. Berard has also stated, that these properties belong to light reflected by mirrors and to that which is divided by the Iceland spar, as well as to direct light.

Results so decisive have not been obtained, on the power of magnetising iron, attributed to the violet ray by Mr. Morichini, a learned chemist of Rome. Though the needles, exposed to this ray, have appeared to become magnetised in some experiments, they have not experienced the same effect in a variety of others ; and we cannot, at present, account for the difference of results, for in both cases, every thing that was known to impart the magnetic property, was carefully removed. It is true, that the summer of 1813 was not favourable to experiments of this kind, on account of a want of serenity in the atmosphere.

Laws of Dilatation by Heat.

Of all the phenomena that heat presents, the dilatation that it produces in bodies is that, the laws of which can be most easily expressed by mathematical formulæ, and the knowledge of these laws, which forms an essential part of physics, is also very im-

portant in a variety of chemical experiments. Mr. Biot has been much engaged upon this subject, and taking for the standard of comparison the dilatation of mercury, he finds that the true dilatation of other fluids may be ascertained by the sum of this dilatation, its square and its cube; by multiplying these three terms by a particular co-efficient, which must be determined for each fluid, but which, being once obtained, remains the same for every degree. As the substance of the thermometer, that contains the fluid that we examine, dilates also, the apparent dilatation is different from the true; nevertheless, Mr. Biot shews, that this dilatation is made according to a similar law. He has calculated by the experiments of Mr. Deluc, the co-efficients proper for eight fluids, whose laws it is most necessary to know; and he has shown, that the co-efficient being once obtained, the formula gives the dilatation of each degree as well as the experiment itself. He has, in fine, applied it to the combined dilatation of the vessel and the fluid, and has proved that it is possible to unite the effects that belong to the fluid and its covering, and to appreciate their influence with sufficient accuracy to find, by a single calculation, all the observed results; so that the calculation can hereafter be a substitute in a variety of cases for direct observation, and the results that he has obtained may be received with confidence. This advantage is so much the more important, as these researches require the greatest delicacy, and if the most accurate attention is not given to them, a variety of causes, easy to be understood, but difficult to present, continually disturb the experimenter.

Analysis of Soap.

Soap, as every one knows, is the combination of an alkali with a fat substance, but no one has particularly examined the alteration which the fat substance undergoes in this union.

Mr. Chevreul, assistant naturalist to the museum of natural history, has taken up this research and has arrived at many new and curious discoveries. The soap, made with potash and hog's-fat dissolved in water, leaves a pearly deposition, which being separated from its saline accompaniments, exhibits a substance possessed of very peculiar properties, and which Mr. Chevreul has called *margarine* from its pearl-like colour. This matter is

insoluble in water, but dissolves abundantly in hot alkohol. It melts at 56° R. and crystallizes, on cooling, into needles of the purest white. It combines with potash and then re-assumes the character of the pearly deposition. Its affinity with this alkali is greater than that of the carbonic acid, which it expels from the carbonate of potash, when assisted by ebullition. It also takes potash from tournesol, to which it restores its red colour.

Combination of Oxymuriatic Gas with Azote.

Mr. Dulong, Professor of Chemistry at Alfort, has lately been nearly falling a victim to his zeal for science, but his danger has been compensated by a fine discovery, that of the combination of azote with the oxymuriatic acid, which presents the most singular properties. In order to obtain it, it is necessary to present to the oxymuriatic acid or to *chlorine*, as the English chemists now call it, azote, not in the state of gas, but in some combination, that of an ammoniacal salt for example, provided that the acid of this salt is not so volatile as to be displaced by the oxymuriatic. Mr. Dulong causes a current of oxymuriatic gas to pass through a solution of such a salt, and he obtains a sort of oil of a yellowish colour, more weighty than water, which speedily evaporates in the air, and detonates by heat in the open air, with a noise louder than that of a musquet. Copper decomposes it, seizing its acid and disengaging azote, from which we readily discover its principles. But what renders the study of it dangerous is, that the slightest portion of it, placed in contact with a combustible substance, phosphorus for example, produces a violent explosion and breaks all the apparatus. It is a new example, and so far as we know, the most powerful of all, of those combinations in which the caloric that held the elements in the state of gas, remains with them, when reduced to the liquid or solid state, a circumstance which the oxymuriatic acid presents oftener than any other. Mr. Dulong proposed to determine the proportion of the two principles of this new matter and its modes of action on other bodies, especially metals. But the accidents, which this young chemist experienced on two occasions, the second of which deprived him of an eye, in some measure restrained his ardor for knowledge, and for the interest of the sciences, which

he may yet improve, the class persuaded him to direct his sagacity towards other objects.

This same substance came near depriving chemistry of one of its most illustrious supports. Sir Humphrey Davy, Secretary of the Royal Society, who, though still young, has already made numerous and brilliant discoveries, especially that of the metallization of the alkalies and earths, which opens a new field to so many branches of natural science.

Discovery of Iode.

A substance equally remarkable has lately presented itself to Mr. Courtois, manufacturer of salt-peter at Paris. Messrs. Clement and Desormes have exhibited it to the class, and Mr. Gay Lussac has performed many instructive experiments on it. It is derived from the mother-waters of the soda, formed from kelp, by the sulphuric acid and distillation. When cooled and condensed it has the grain, the brilliancy, and the colour of black lead. When it has not been purified, it melts at 66° of heat ;* but when it has been purified by dissolving it in excess of potass and distilling it, it melts only at a much greater degree of heat. Its most striking property is that of rising in a vapour, or rather in a gas of the most beautiful violet, perfectly homogeneous and transparent. Neither red heat, oxygen nor carbon act upon it. It unites with the metals and with their oxides and these combinations are soluble in water ; with ammonia it produces a fulminating powder ; sulphuretted hydrogen discolours and converts it into a powerful acid, from which it is precipitated anew by the oxymuriatic, sulphuric, or nitric acids. In a word, its habits of action with reagents are so perfectly comparable with those of the oxymuriatic acid or chlorine, that we may adapt a double theory to it in the same manner ; that is to say, we may consider the new substance as a combination of a peculiar and undecomposable acid with a superabundance of oxygen ; or according to the new mode in which Mr. Davy considers the subject, it must be regarded, like chlorine, as a simple substance, which should produce an acid on combining it with hydrogen. In the first system, we must suppose, as is done with respect to the oxymuriatic acid, that hydrogen unites with the superabun-

* The French usually employ the scale of Reaumur.

dant oxygen and forms water, which no method can separate from the acid thus deoxygenated. In fact what induced Mr. Davy to change the received theory of the oxymuriatic acid was, that hydrogen reduces it to the state of common muriatic acid, without its being possible to obtain the water that should be formed, if it merely took oxygen from the oxymuriatic acid. Mr. Davy applies a theory, which is analogous and founded on the same reasons, to the fluoric compounds.

This learned chemist, who has been very lately named correspondent of the class, has presented a memoir on this very substance, in which he insists on its relations to the oxymuriatic acid, and on the motives which induced him to consider both, as simple bodies, capable of burning and acidifying combustible substances in the same way as oxygen. Thus, when the new matter, (which it seems to be agreed shall be called *iode*, from the colour of the gas) combines with potassium or the metal of potass, it exhibits a beautiful blue flame, but does not give out any gas. If, on the contrary, potassium is dissolved in the acid of iode, hydrogen is disengaged, and the same thing happens with the other metals. Mr. Davy attributes the formation of this acid by phosphorus to the humidity which always adheres to iode, and which is decomposed. For the rest, he has not succeeded by any process in obtaining oxygen from iode, nor from its acid, nor in causing oxygen to act on either, nor in causing them to act on carbon, nor in decomposing iode by the pile. But iode as well as chlorine forms ternary compounds with the alkalis, namely of the iode, the metal of the alkali and oxygen. These detonate with carbon and may be employed for the same purposes as nitre.

The detonating powder, which Messrs. Clement and Desormes have obtained from iode by ammonia is, according to Mr. Davy a compound of iode and azote, so that it should be analogous to the terrible substance produced by Mr. Dulong on combining azote with chlorine.

Analyse des Travaux de l'Institut, 1813.

[The following piece, which has been transmitted to us by one of the colleagues of Mr. Larrey, will convey an idea of the manner in which surgery is actually practised in the French armies.]—*Journal de Médecine.*

Head Quarters at Dresden, July 14, 1813.

TO THE PRINCIPAL SURGEONS.

Do me the favour, gentlemen, to avail yourselves of the repose which the armistice affords us, to make known to the surgeons under your orders the duties they must perform the moment a new campaign opens, and especially the method of dressing wounds on the field of battle, as well as the manner of continuing their treatment in the Hospitals.

Let not your fellow-labourers forget that the successful termination of a wound depends principally on the first dressing and the operations done at the commencement.

Let them know that in the earliest moments, the proper dilatation of wounds must be made, foreign bodies extracted and the dressings carefully applied.

That in the first moments, after the necessity for it is clearly decided, amputations should be practised; and that they should carefully guard against the specious reasoning of some authors, who have admitted a few fortunate cures as the result of consummate experience, although these cures have been obtained, after a series of incalculable dangers.

Remind them, finally, that amputation, seasonably performed, is the greatest benefit of our art, and the only means of saving the lives of a great number of wounded.

Recommend to them never to employ brandy nor other spiritous liquors in the first dressings; the *eau marinée*, or simple water to moisten the first pieces of the dressings is sufficient.

That the dilatation or incision of wounds should be made with precaution.

That above all, they should avoid filling the interior of the wound with lint, in the way practised formerly.

That recent wounds should be dressed superficially.

That those with loss of substance should be dressed in such way as that the lint or fine stuff, substituted for it, should not be in direct contact with them; but that these wounds should be

covered with fine linen, which is itself to be covered with a compress of soft lint or tow.

Gunshot wounds in the head with injury of the cranium should be sparingly dilated.

Those made in the same part with cutting weapons ought not to be united immediately. The union is commonly injurious, especially if the bone is deeply injured, because that besides the inflammation which frequently occurs, there exists in the injured bony part a disorganization, which suppuration or exfoliation alone can remedy.

The last mode of dressing wounds in the head consists in the immediate application of a compress dipped in a solution of salt and water, covered with a light layer of lint and some compresses. The whole to be retained by the bandage with six heads, called Galen's. This application sufficiently favours the approach of the edges of the wound and renders the dressing easy.

Gunshot wounds in the face require but little dilatation, and should be covered with simple dressings and retaining bandages.

Those made by cutting weapons, with a division of the ears, nose, eyelids, cheeks, lips, all require the use of the suture, called interrupted, for their union. This method cannot be set aside for any other, and the neglect of it will entail the loss of certain functions or prove the cause of deformity.

On this subject, cause the young surgeons to observe well that the suture is only the means of preserving the exact contact of parts, which ought to be supported by bandages, carefully and methodically applied.

Penetrating wounds of the chest, by whatever cause produced, ought to be closed by bringing together their edges by simple means, after having first obtained a correspondence between the division of the muscles and integuments with the opening in the thoracic cavity. Scarifications in the neighbourhood of the wound with a cupping instrument, produce marvellous effects and supply the place of general bleeding.

In penetrating wounds of the abdomen with discharge of the omentum, this fatty membranè should not be tied. If the omentum cannot, or ought not be reduced, the treatment should be restricted to simple dressings and the rest left to nature.

Amputations should be made according to the most approved methods; but there is one, adopted by all good practitioners, which should be deviated from, as little as possible.

1st. In amputation, performed in the midst of a limb, to preserve skin and flesh enough to prevent a projection of bone ; to bring the parts together by means simply retaining, after having carefully tied all the vessels ; and to wait the establishment of suppuration before removing the first dressing.

2d. In amputations performed near the joints, to make new flaps according to the direction of the joint ; to give these flaps a form and size well adapted to produce the effect of a circular amputation.

Splints, &c. should not be employed in wounds of limbs, attended with fracture. These machines are usually hurtful. They are conveniently replaced by bolsters of straw rolled in a splint-cloth and by other common apparatus.

Recommend to the surgeons-major to exercise their fellow-labourers daily in the preparation and regular application of all kind of dressings, as well as the practice of such operations as may be convenient.

Finally, neglect nothing to inspire a disposition for order, discipline and emulation among the younger surgeons.

Signed by the **BARON LARREY,**
Inspector General, &c.

The Croonian Lecture on Muscular Motion.

This was read by Mr. Brodie, beginning with a general view of the doctrine established by Haller, and improved by subsequent physiologists, that muscular motion is dependent on nervous excitement and that such excitement is derived from the brain. He examined the recent opinions of Mr. Le Gallois, that muscular motion is occasioned by the spinal marrow, and the stimulus of the blood on the heart ; the result of four or five experiments was stated, all of which tended to prove that the blood does not occasion the contractions and pulsations of the heart ; that the circulation can be continued by artificial respiration after decapitation, but that it instantly stops when the heart is prevented from communicating with the spinal marrow. Nevertheless, the author appeared to ascribe the principal source of muscular irritability to the brain, and the nerves ramifying from it. In cold blooded animals, particularly the frog, he found that the pul-

sations of the heart continued above an hour after being separated from the spinal marrow, and that the irritability remained more than a day.

Natural History.

Mr. Lamarck, member of the French Institute, has published a New System of Natural History, explaining in a way peculiar to himself the classes, orders and genera of animals ; but as travelers have since discovered many new species and genera, and anatomists have better developed their structure, Mr. Lamarck has published an abridged syllabus of his course, according to this perfected method, in which he indicates the character of the superior divisions, and merely gives the simple nominative enumeration of the genera, supposing that those animals which have no nerves apparent, are moved only in virtue of their irritability, he denominates them Apathic Animals. He gives the name of sensible animals to others without vertebræ and reserves that of intelligent, for those with vertebræ. To the old classes he adds that of cirrhipedes, which comprehends the sea glands and their analogous genera ; and the epizoary, or intestinal worms, he places among his apathic animals, with that of the infusores or microscopic animals, without mouths or apparent intestines. He leaves the echinodermes among radiarii and the apathic animals.

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